SECTION1 SUMMARY
KEY TO ABBREVIATIONS

A	AC	:Alternating Current
	ACC	:Automatic Color Control
	ACSS	:Automatic Channel Setting System
	ADJ	:Adjust
	A/E	:Audio Erase
	AFC	:Automatic Frequency Control
	AFT	:Automatic Fine Tuning
	AGC	:Automatic Gain Control
	A.H.SW	:Audio Head Switch
	ALC	:Automatic Level Control
	AM	:Amplitude Modulation
	AMP	:Amplifier
	ANT	:Antenna
	APC	:Automatic Phase Control
	ASS'Y	:Assembly
	AUX	:Auxiliary
B	B	:Base
	BGP	:Burst Gate Pulse
	BPF	:Bandpass Filter
	BS	:Brodcasting Satellite
	BW or B/W	:Black and White
C	C	:Capacitor, Chroma, Collector
	CAN	:Cancel
	CAP	:Capstan
	CAP.BRK	:Capstan Brake
	CAP.RVS	:Capstan Reverse
	CATV	:Cable Television
	CBA	:Circuit Board Assembly
	CCD	:Charge Coupled Device
	C.CTL	:Chro Control, Capstan Control
	CFG	:Capstan Frequency Generator
	CHROMA	:Chrominance
	CNR	:Chroma Noise Redution
	COMB	:Combination Comb Filter
	COMP	:Comparator Composite Compensation
	CONV	:Converter
	C.ROT SW	:Color Rotary Switch
	CS	:Chip Selcet
	C.SYNC	:Composite Synchronization
	CTL DIV	:Control Divide
	CUR	:Current
	CYL	:Cylinder
D	D	:Drum, Digital, Diode, Drain
	D.ADJ	:Drum Adjust
	DC	:Direct Current
	D.CTL	:Drum Control
	DEMOD	:Demodulator
	DET	:Detector
	DEV	:Deviation
	DHP	:Double High Pass
	DIGITRON	:Digital Display Tube
	DL	:Delay line
	DOC	:Drop Out Compensator
	DUB	:Dubbing
	D.V SYNC	:Dummy Vertical Synchronization
E	E	:Emitter
	EE	:Electric to Eletric
	EMPH	:Emphasis
	ENA	:Enable
	ENV	:Envelope
	EP	:Extended Play
	EQ	:Equalizer
	EXP	:Expander
F	F	:Fuse
	FB	:Feed Back
	FBC	:Feed Back Clamp
	FE	:Full Erase
	FG	:Frequency Generator
	FL	:Filter
	FM	:Frequency Modulation
	F/R	:Front/Rear
	FS	:Frequency Synthesizer
	FSC	:Subcarrier Frequency
	F/V	:Frequency Voltage
G	GEN	:Generator
H	H	:High, Horizontal
I	IC	:Integrated Circuit
	IF	:Intermediate Frequency
	INS	:Insert
L	L	:Low, Left, Coil
	LD	:LED
	LD VTG CTL	:Loading Voltage Control
	LECHA	:Letter Character
	L.M	:Level Meter
	LP	:Long Play
	LPF	:Low Pass Filter
M	MAX	:Maximum
	MD	:Modulator
	MECHA.CTL	:Mechanism Control
	MIC	:Microphone
	MIN	:Minimum
	MIX	:Mixer, Mixing
	M.M.	:Monostable, Multivibrator
	MMV	:Mono Multi Vibrator
	MOD	:Modulation, Modulator
	MODEM	:Modulator-Demodulator
	MPX	:Multiplex
N	NR	:Noise Reduction
O	OSC	:Oscillator
	OSD	:On Screen Display
P	PB	:Playback
	PCB	:Printed Circuit Board
	P.CTL	:Power Control
	PRE-AMP	:Preamplifier
	P.F	:Power Failure
	PG	:Pulse Generator
	PLL	:Phase Locked Loop
	PREM.DET	:Premire Detect
	P.P	:Peak-to-Peak
	PS	:Phase Shift
	PWM	:Pulse Width Modulation
	PWR CTL	:Power Control
Q	Q	:Transistor
	QH	:Quasi Horizontal
	QSR	:Quick Setting Record
	QTR	:Quick Timer Record
	QV	:Quasi Vertical
R	R	:Resistor, Right
	RE(or RC)	:Remocon, Receiver
	REC	:Recording
	REC S 'H'	:Record Start 'Hight'
	REF	:Reference
	REG	:Regulated, Regulator
	REMOCON	:Remote Control(unit)
	RF	:Radio Frequency
	R/P	:Record/Playback
	RTC	:Reel Time Counter
S	S	:Serial
	S.ACCEL	:Slow Accel
	SAOP	:Second Audio Program
	SC	:Scart, Simulcast
	S.DET	:Secam Detect
	SH	:Shift
	SHARP	:Sharpness
	SIF	:Sound Intermediate Frequency
	SLD	:Side Locking
	S/N	:Signal to Noise Ratio
	SP	:Standard Play
	ST	:Stereo
	SUB	:Subtract, Subcarrier
	SW or S/W	:Switch
	SYNC	:Synchronization
	SYSCON	:System Control
T	T	:Coil
	TP	:Test Point
	TR	:Transistor
	TRK	:Tracking
	TRANS	:Transformer
	TU	:Tuner, Take-up
U	UHF	:Ultra High Frequency
	UNREG	:Unregulated
V	V	:Volt, Vertical
	VA	:Always Voltage
	VCO	:Voltage Controlled Oscillator
	VGC	:Voltage Gain Control
	VHF	:Very High Frequency
	V.H.SW	:Video Head Switch
	VISS	:VHS Index Search
	VPS	:Video Program System
	VR	:Variable Resistor or Volume
	V-SYNC	:Vertical Synchronization
	VTG	:Voltage
	VV	:Voltage to Voltage
	VXO	:Voltage X-tal Oscillator
W	W	:Watt
	WHT	:White
	W/O	:With out
X	X-TAL	:Crystal
Y	Y/C	:Luminance/Chrominance
	YNR	:Luminance Noise Reduction
Z	ZD	:Zener Diode

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, the products are strictly inspected to confrom with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

• Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (⋎) parts are critical for safety.
   Replace only with specified part numbers.
   Note : Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Use Specified internal wiring. Note especially:
   1) Double insulated wires
   2) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistor

5. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

6. Check that replaced wires do not contact sharp edged or pointed parts.

7. 1) When a power cord has been replaced, check that A mark is made on the cord, under strain, near the aperture, and the flexible cord is subjected 100 times to a pull of 40N for a duration of 1 second each.
   2) During the test, the cord shall not be displaced by more than 2mm

8. Also check areas surrounding repaired locations.

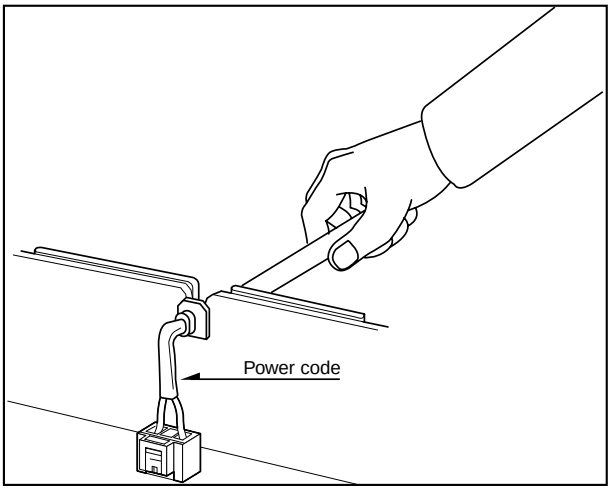


Fig. 1

SAFETY CHECK AFTER SERVICING

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

• Insulation resistance test

confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, incrophone jacks, earphone jacks, etc.) See table below.

• Dielectric strength test

Confirm specified dielectric strength or greater between power cord prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, incrophone jacks, earphone jacks, etc.) See table below.

• Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

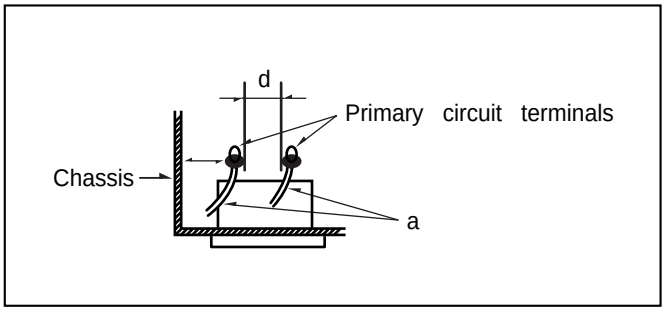


Fig. 2

Table 1 : Ratings for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance(d),(d)
*100 to 130 V 200 to 240 V	Europe Australia	F 10 MΩ/500 V DC	4kV 1 minute	F 6mm(d) F 8mm(d) (a Power cord)

* Class II model only.

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

• Leakage Current test

Confirm specified or lower leakage current between B(earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.)

Measuring Method: (Power ON)
Insert load Z between B(earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

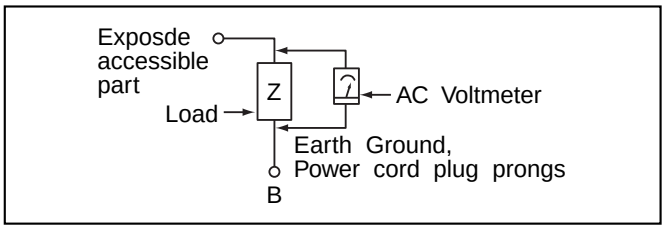


Fig. 3

Table 2:Leakage current ratings for selected areas.

AC Line Voltage	Region	Load Z	Leakage Current(i)	Earth Ground (B) to :
100 to 130 V	Europe	2kΩ	i E 0.7m A peak i E 2m A DC	Antenna earth terminals
200 to 240 V	Australia	50kΩ	i E 0.7m A peak i E 2m A DC	Other terminals

Note. This table is for IEC member only. Be sure to confirm the precise values for your particular country and locality.

SECTION 2 CABINET & MAIN CHASSIS
SERVICE METHOD

Electrical Part

(1) Re-assembly Flow for service like Fig. 2-1

Timer C.B.A

Main C.B.A

Housing & Deck Assembly

(2) To check and replace Electrical parts

① Re-assemble the unit according to No.1) Re-assembly Flow.

② Place the unit like Fig. 2-1

③ Check and replace Electrical parts.

NOTE :

① Insert Video Cassette Tape inversely like Fig. 2-1 to check and replace defective parts.

② In disassembling and reassembling, be careful not to damaged CST switch.

(Positioned Upside Down)

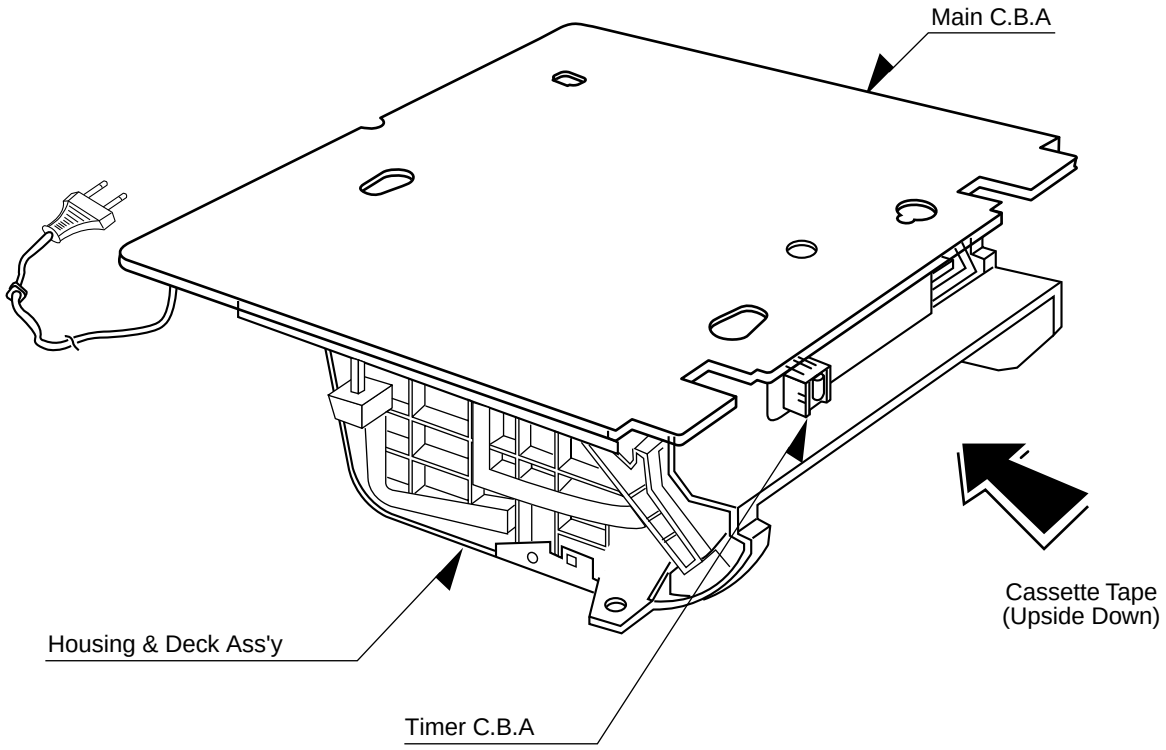
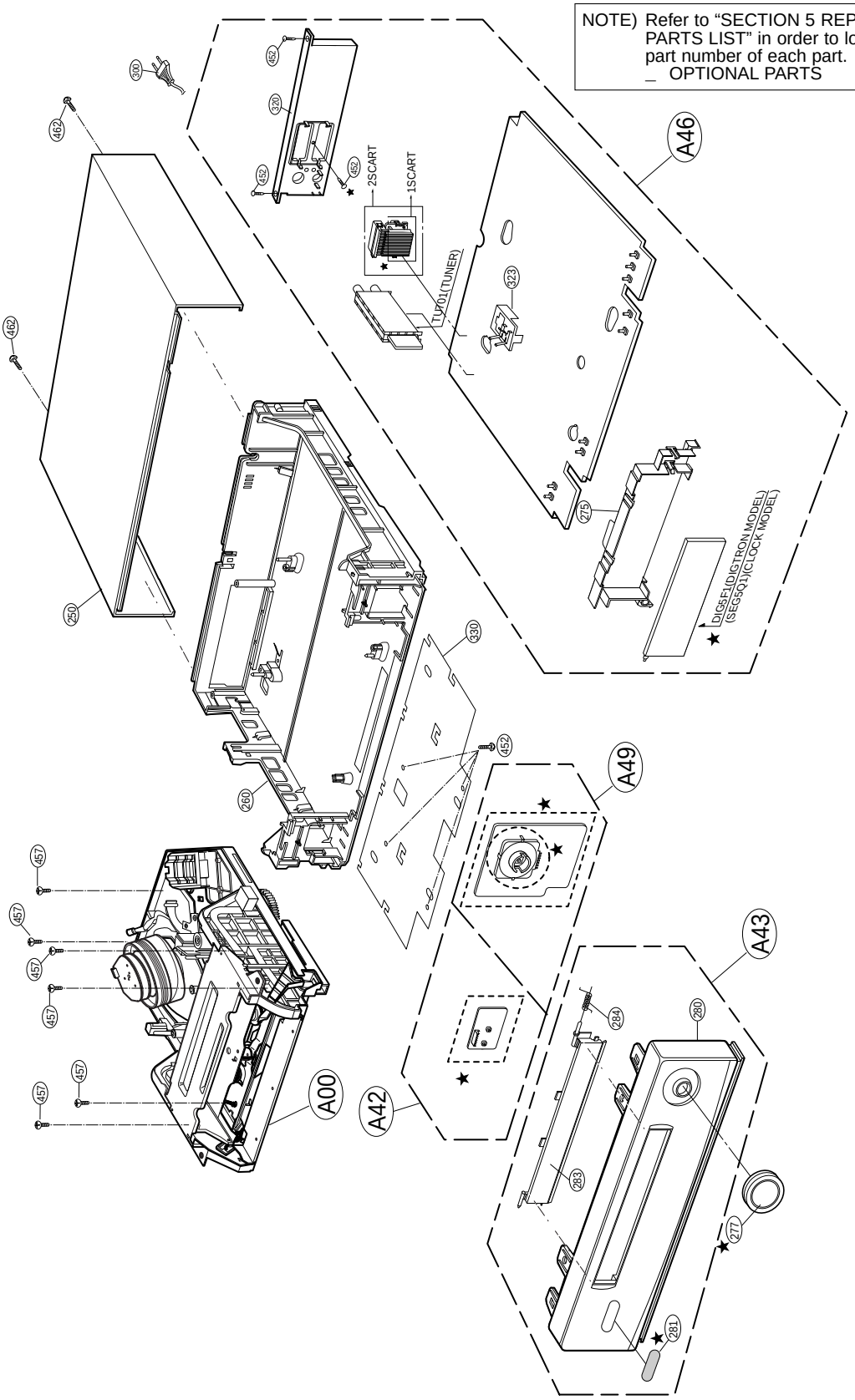


Fig.2-1

EXPLODED VIEWS

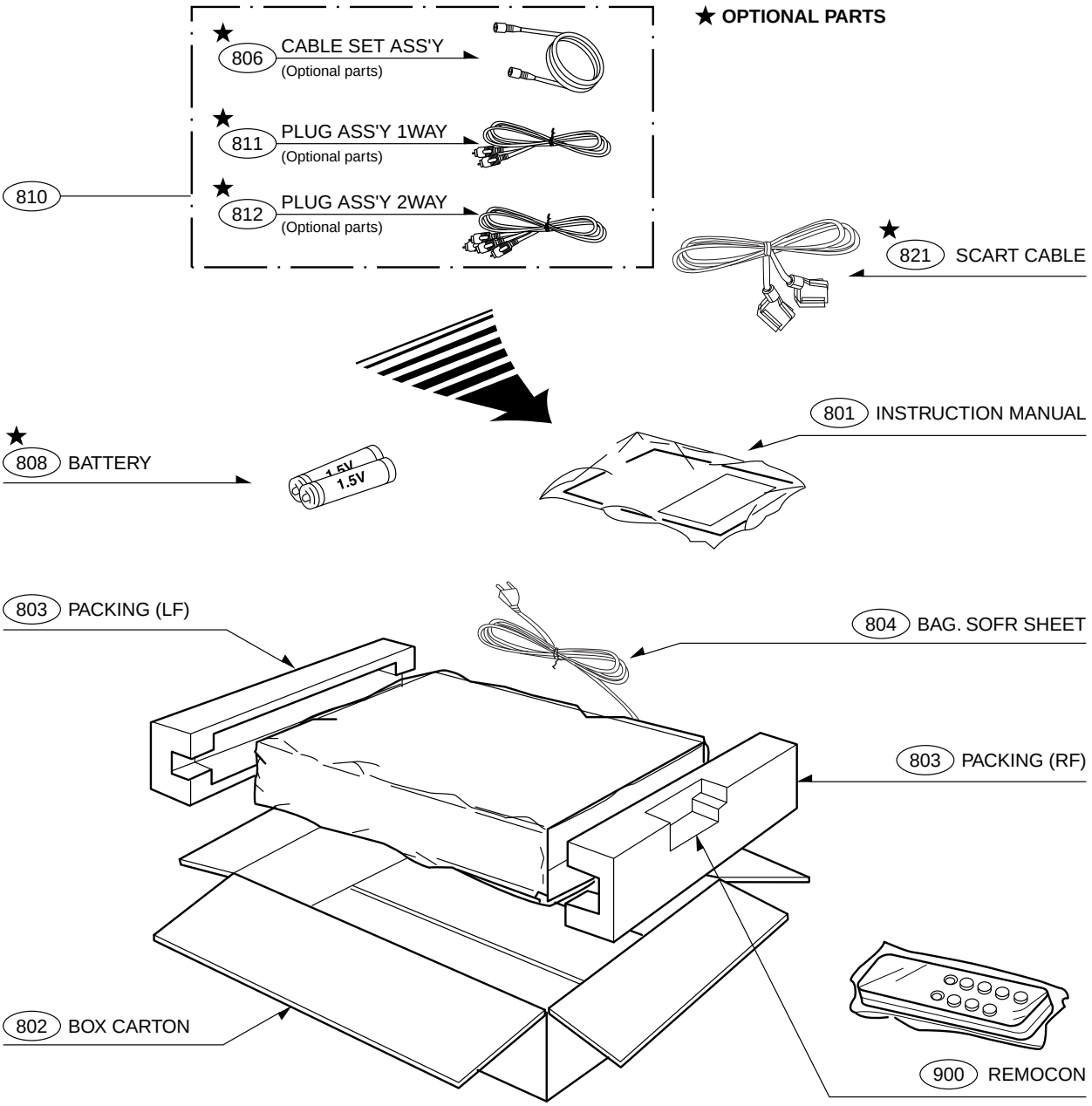
1. Cabinet and Main Frame Section

NOTE) Refer to “SECTION 5 REPLACEMENT PARTS LIST” in order to look for the part number of each part.
_ OPTIONAL PARTS



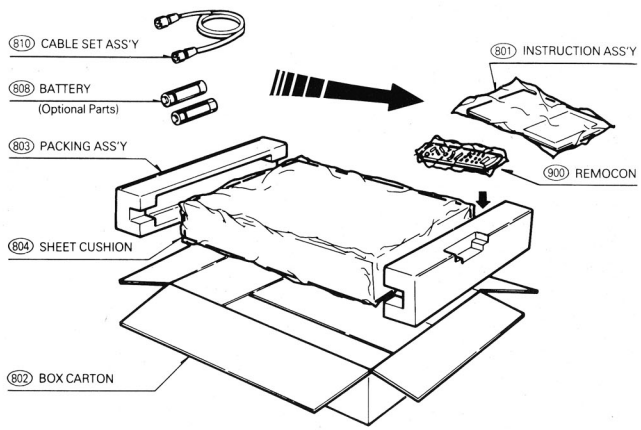
2.Packing Accessory Section

NOTE) Refer to “SECTION REPLACEMENT PARTS LIST in order to look for the part number of each part.

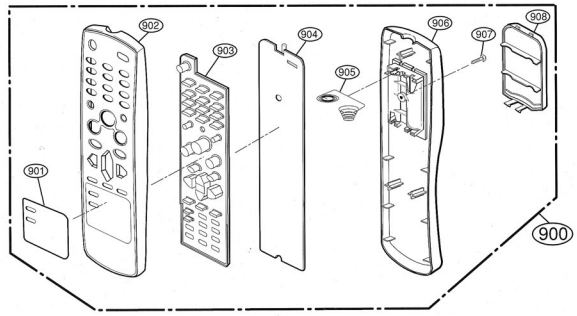


2. Packing & Accessory Section

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.

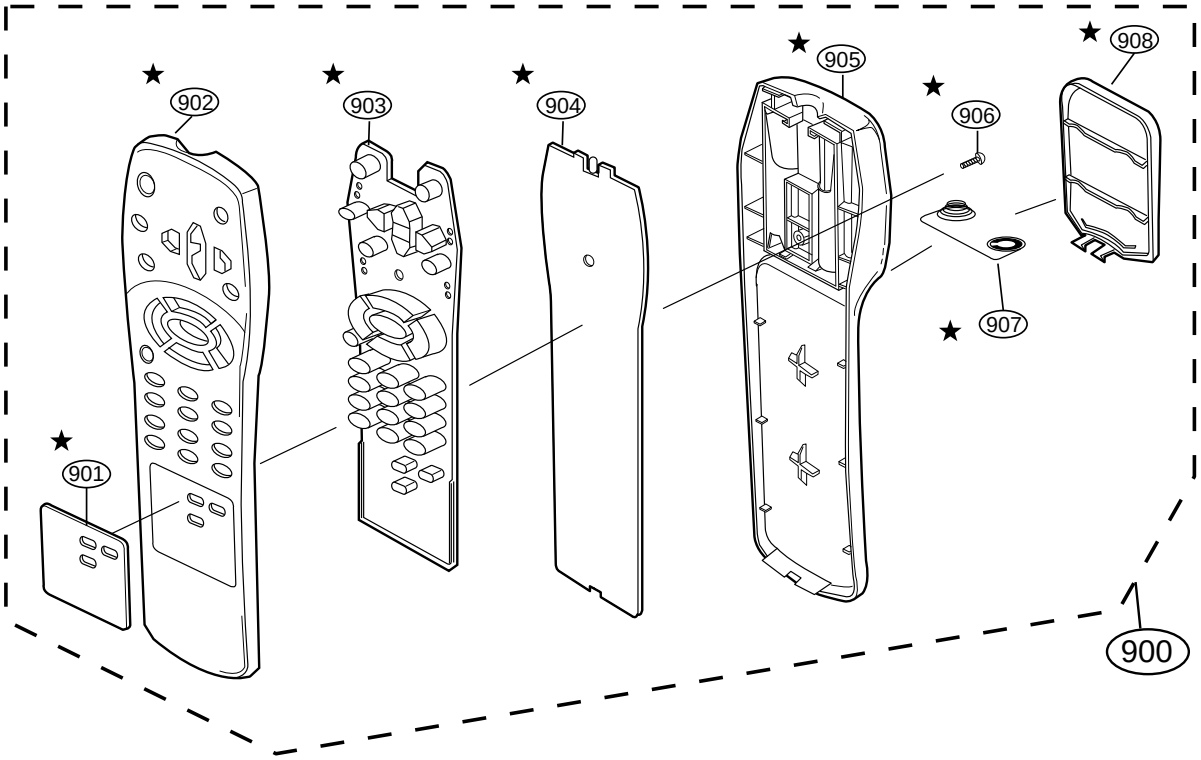


3. Remote Control Section



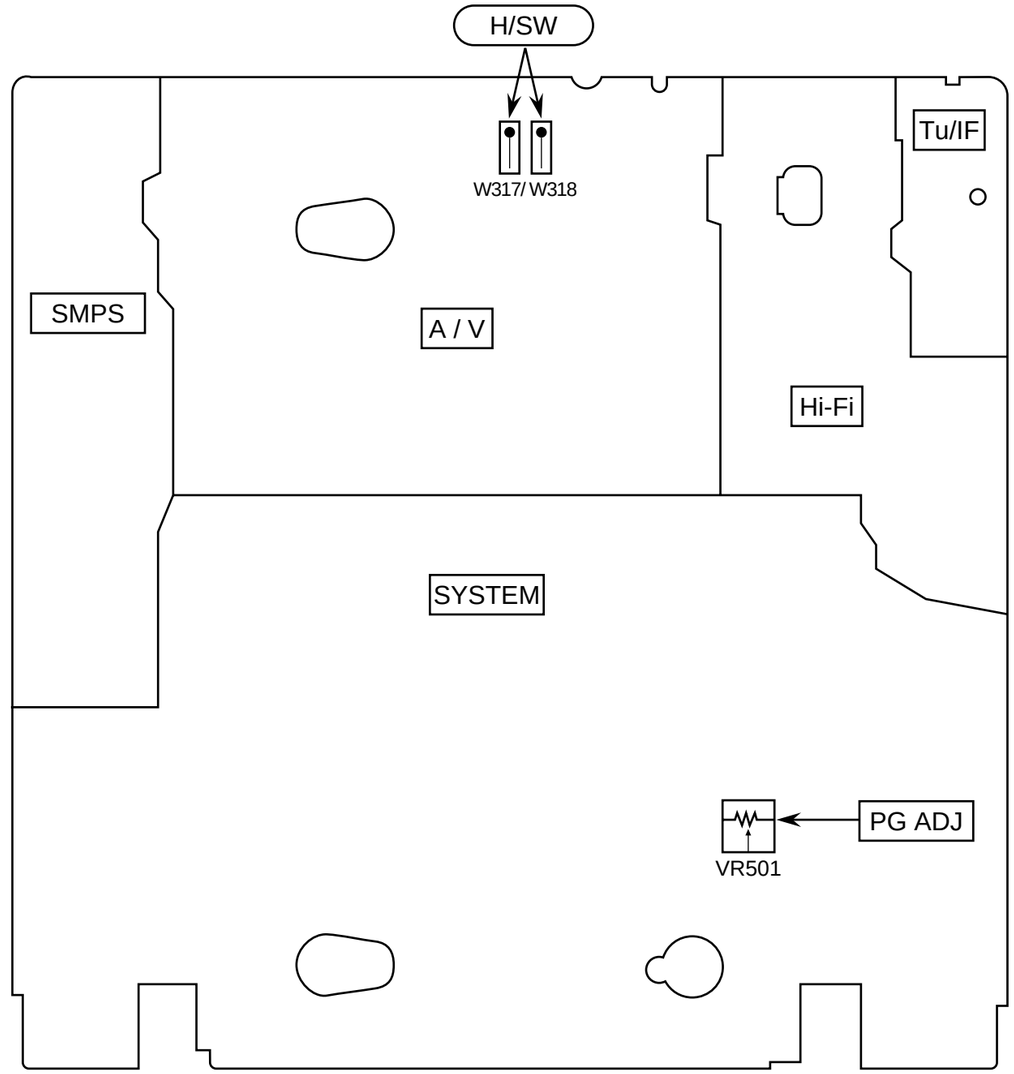
3.Remote Control Section

★ **OPTIONAL PARTS**



SECTION 3 ELECTRICAL
ELECTRICAL ADJUSTMENT POINTS ARRANGEMENT

: Measurement point
: Adjustment point



MAIN P.C.B **(Component Side)**

ELECTRICAL ADJUSTMENT PROCEDURES

1. Servo Adjustment

1) PG Adjustment

• Test Equipment

a) OSCILLOSCOPE

b) PAL TEST TAPE (VHS SP)

• Adjustment And Specification

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY	V.Out H/SW(W317, W318)	VR501	6.5 ± 0.5H

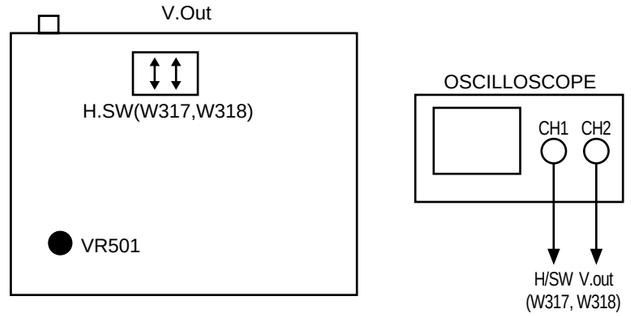
• **Adjustment Procedure**

a) Insert the PAL SP Test Tape and play.
Note - Adjust the distance of X, pressing the Tracking(+) or Tracking(-) when the “ATR” is blink after the PAL SP Test Tape is inserted.

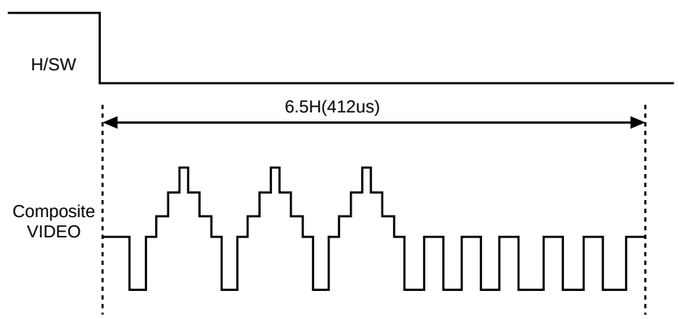
b) Connect the CH1 of the oscilloscope to the H/SW(W317, 318) and CH2 to the Video Out for the VCR.

c) Trigger the mixed Video Signal of CH2 to the CH1 H.SW(W317, W318), and then check the distance (time difference), which is from the selected A(B) Head point of the H.SW(W317, W318) signal to the starting point of the vertical synchronized signal, to 6.5H ± 0.5H (412µs, 1H=63.5µs).

• **CONNECTION**

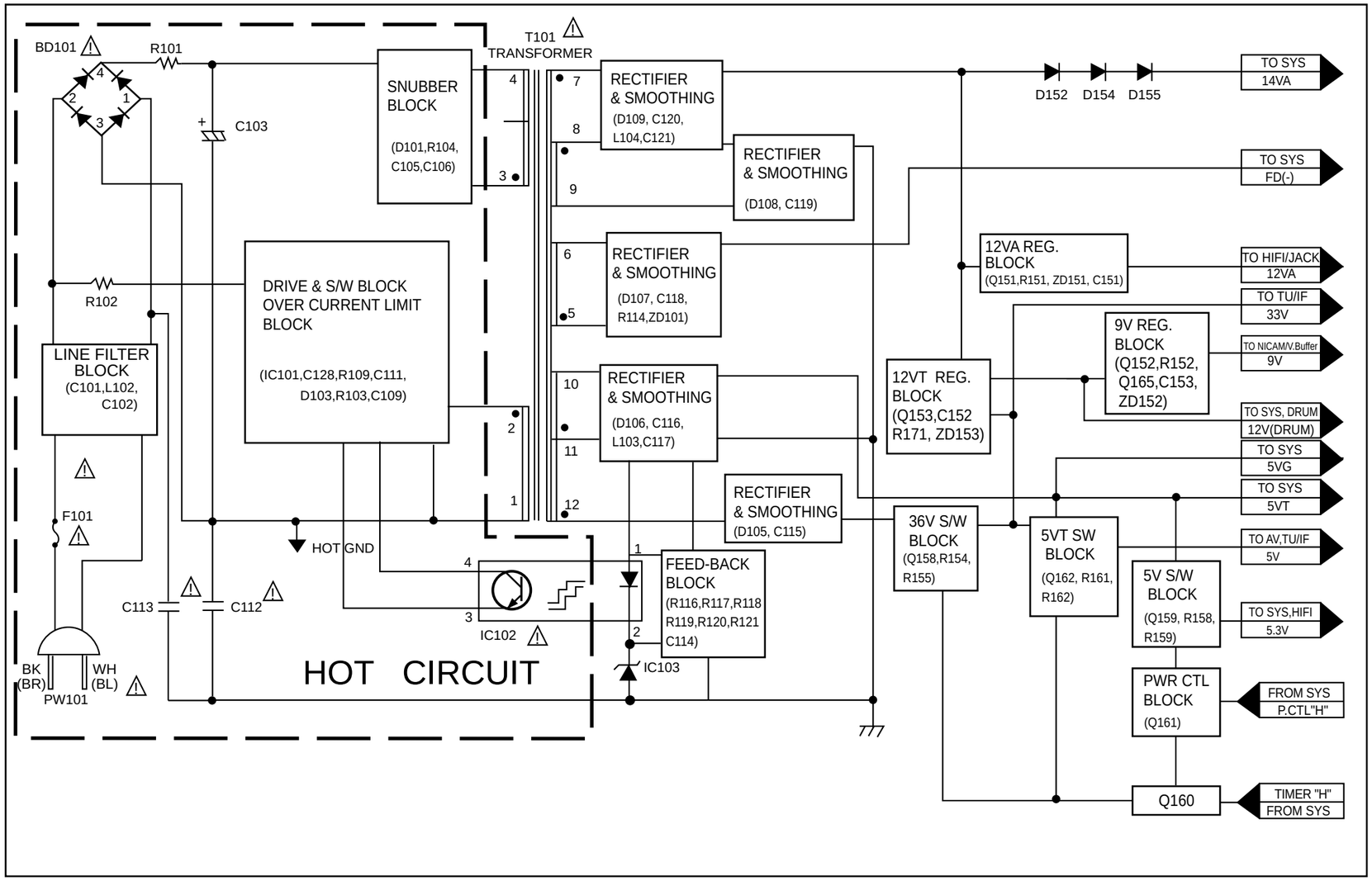


• **WAVEFORM**



BLOCK & CIRCUIT DIAGRAMS

1. Power Block Diagram



'99 05. 20 R10385BA (RCA MODEL)

NOTES : Symbol denotes AC ground.

Symbol denotes DC chassis ground.

*** IC101 Voltage Sheet**

PB	16.1	4.0
REC	16.3	4.6
	5	
	IC101	
	1	
PB	309	0.0	0.0
REC	309	0.0	0.0

*** IC102 Voltage Sheet**

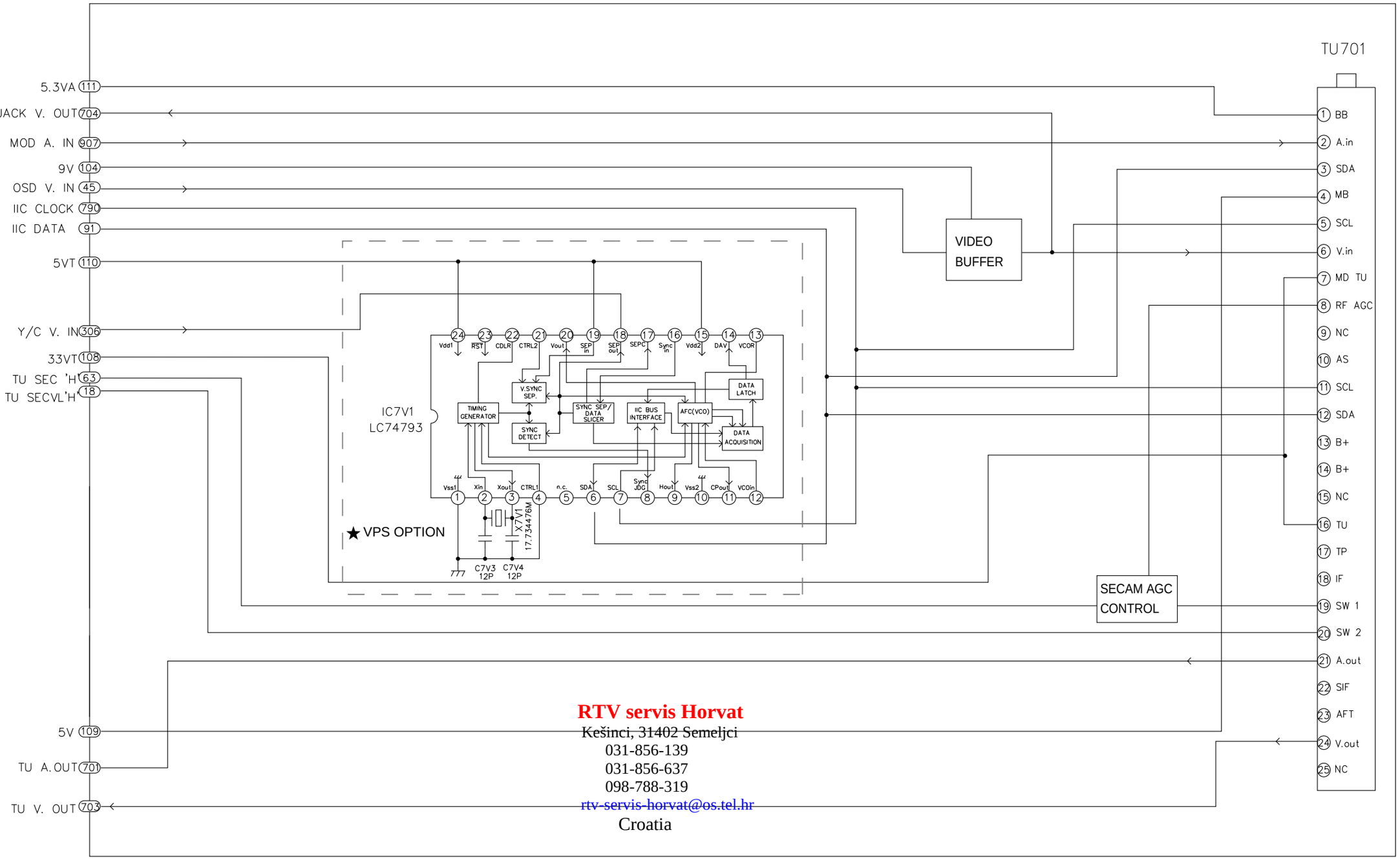
PB	4.0	0.0
REC	4.0	0.0
	4	
	IC102	
	1	
PB	4.9	3.9
REC	4.9	4.0

*** IC103 Voltage Sheet**

	Emitter		Collector		Base	
	PB	REC	PB	REC	PB	REC
IC103	2.5	2.5	0.0	0.0	3.9	3.9

_ TR Voltage Sheet

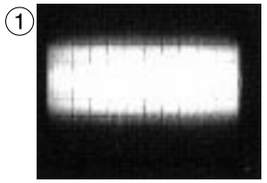
	Emitter		Collector		Base	
	PB	REC	PB	REC	PB	REC
Q151	11.9	11.8	14.8	15.0	12.5	12.4
Q152	9.4	9.3	11.8	11.6	10.0	9.9
Q153	11.8	11.7	14.8	15.0	12.4	12.3
Q154	-27.3	-27.9	-27.3	-27.8	-26.6	-27.0
Q155	5.3	5.3	5.2	5.3	0.0	0.0
Q156	-16.1	-16.5	-16.0	-16.4	-15.4	-15.7
Q157	5.3	5.3	5.2	5.2	0.0	0.0
Q158	35.6	36.0	35.3	35.7	35.0	35.4
Q159	5.3	5.3	5.2	5.2	4.5	4.5
Q160	0.0	0.0	0.0	0.0	5.0	5.0
Q161	0.0	0.0	0.1	0.0	5.0	5.0
Q162	5.3	5.3	5.2	5.2	4.5	4.5
Q164	5.3	5.3	5.3	5.3	4.6	4.6
Q165	0.0	0.0	10.0	10.0	0.0	0.0



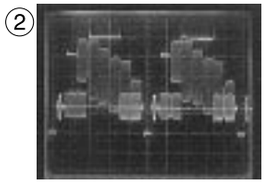
RTV servis Horvat
Kešinci, 31402 Semeljci
031-856-139
031-856-637
098-788-319
rtv-servis-horvat@os.tel.hr
Croatia

'99 02. 10 R10388BB

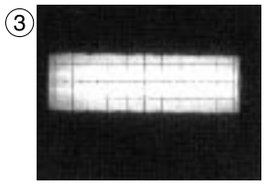
* TU/IF Oscilloscope Waveform

① 

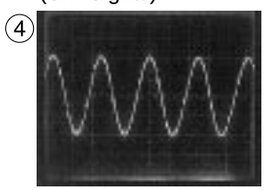
TU701 18 Pin
(IF Signal)

② 

TU701 24 Pin
(Video Signal)

③ 

TU701 22 Pin
& IC751 47 Pin
(SIF Signal)

④ 

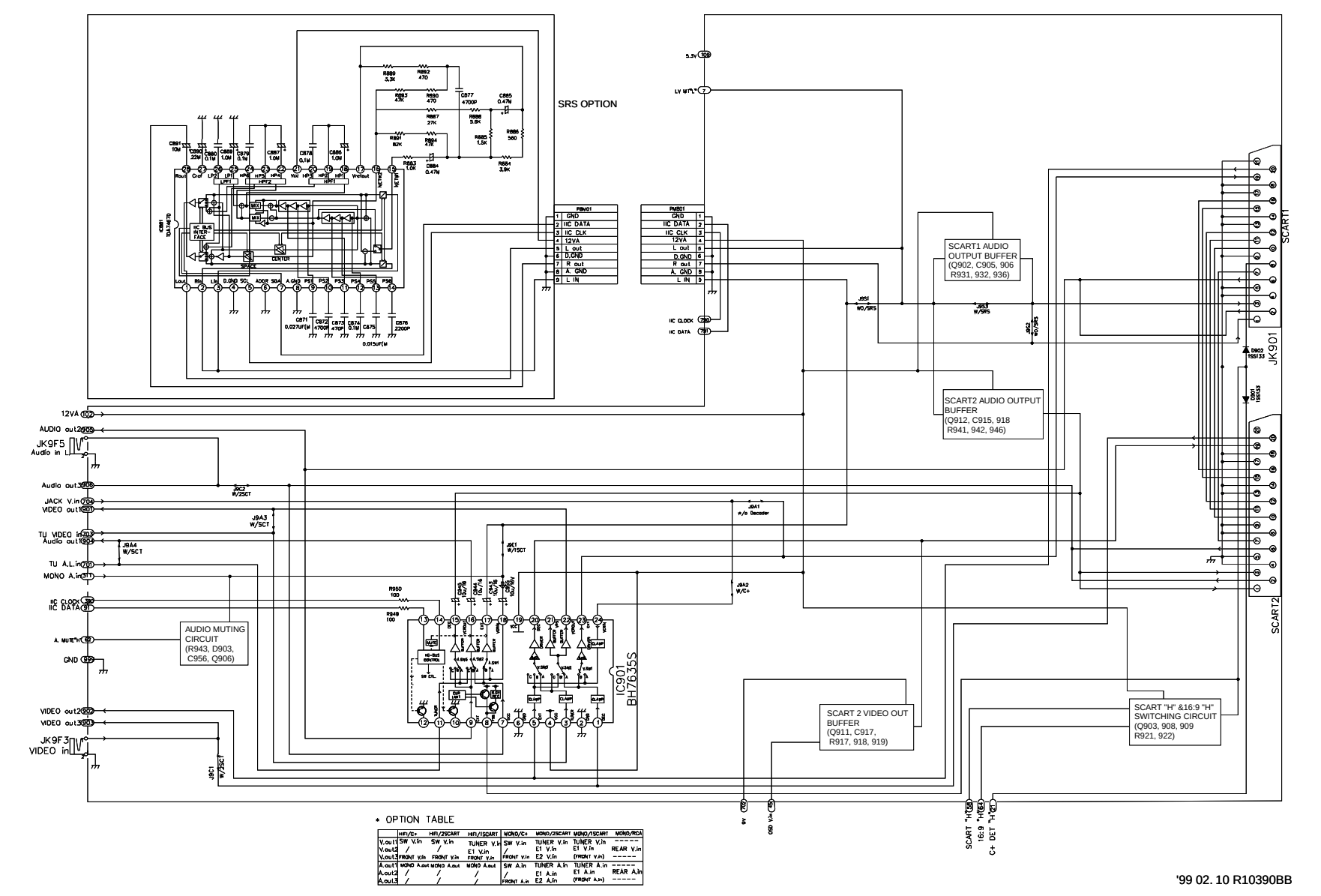
TU701 21 Pin
(Audio signal)

*** TU701 Voltage Sheet**

1	BB	5.25	13	B+	4.985
2	A.iN	0.002	14	B+	4.985
3	SEA	5.1	15	NC	0
4	MB	5.19	16	TU	32.29
5	SCL	5.2	17	TP	0
6	V.iN	0	18	IF	0
7	MD TU	32.27	19	SW1	5.0541
8	KF AGC	2.55	20	SW2	0
9	NC	0	21	A.OUT	2.38
10	AS	0.048	22	SiF	0
11	SCL	5.1	23	AFT	2.463
12	SEA	5.2	24	V.OUT	1.337
			25	NC	0

*** IC7V1 Voltage Sheet**

5.022	4.997	4.497	0.002	4.969	5.032	4.602	2.531	2.933	5.032	0.159	1.276												
												20									15		
IC7V1(LC74793)																							
												5									10		
0.003	2.553	2.627	0.002	0.001	5.2		5.2	5.012	4.645	0.003	2.993	2.992											



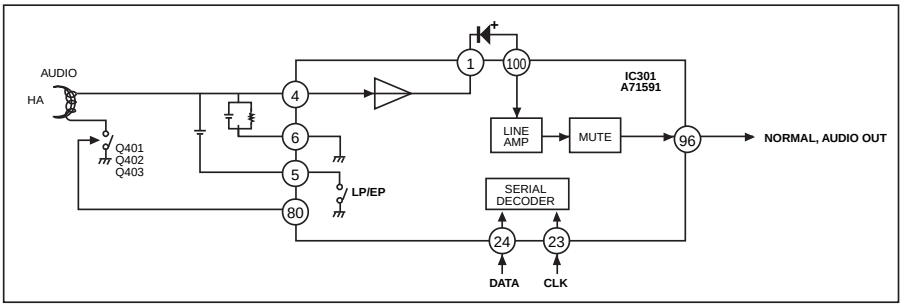
* OPTION TABLE

	HIFI/C+	HIFI/2SCART	HIFI/1SCART	MONO/C+	MONO/2SCART	MONO/1SCART	MONO/RCA
V.out1	SW V.in	SW V.in	TUNER V.in	SW V.in	TUNER V.in	TUNER V.in	------
V.out2	/	/	E1 V.in	/	E1 V.in	E1 V.in	REAR V.in
V.out3	FRONT V.in	FRONT V.in	FRONT V.in	FRONT V.in	E2 V.in	(FRONT V.in)	------
A.out1	MONO A.out	MONO A.out	MONO A.out	SW A.in	TUNER A.in	TUNER A.in	------
A.out2	/	/	/	/	E1 A.in	E1 A.in	REAR A.in
A.out3	/	/	/	FRONT A.in	E2 A.in	(FRONT A.in)	------

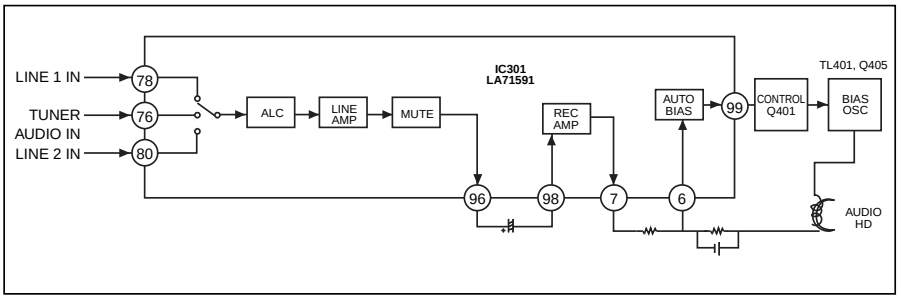
'99 02. 10 R10390BB

4. Audio Block Diagram

1) PB Mode

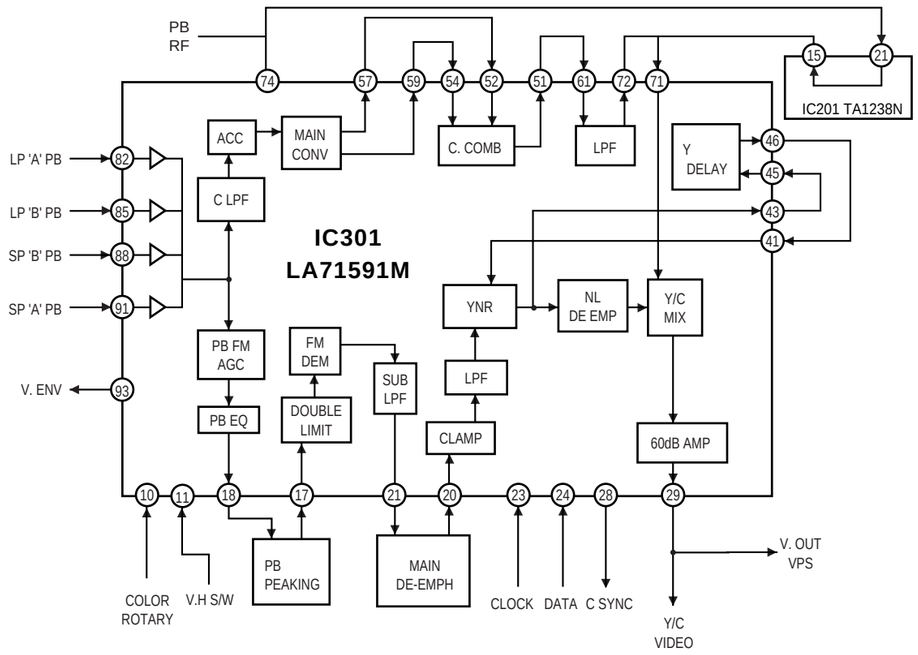


2) REC Mode

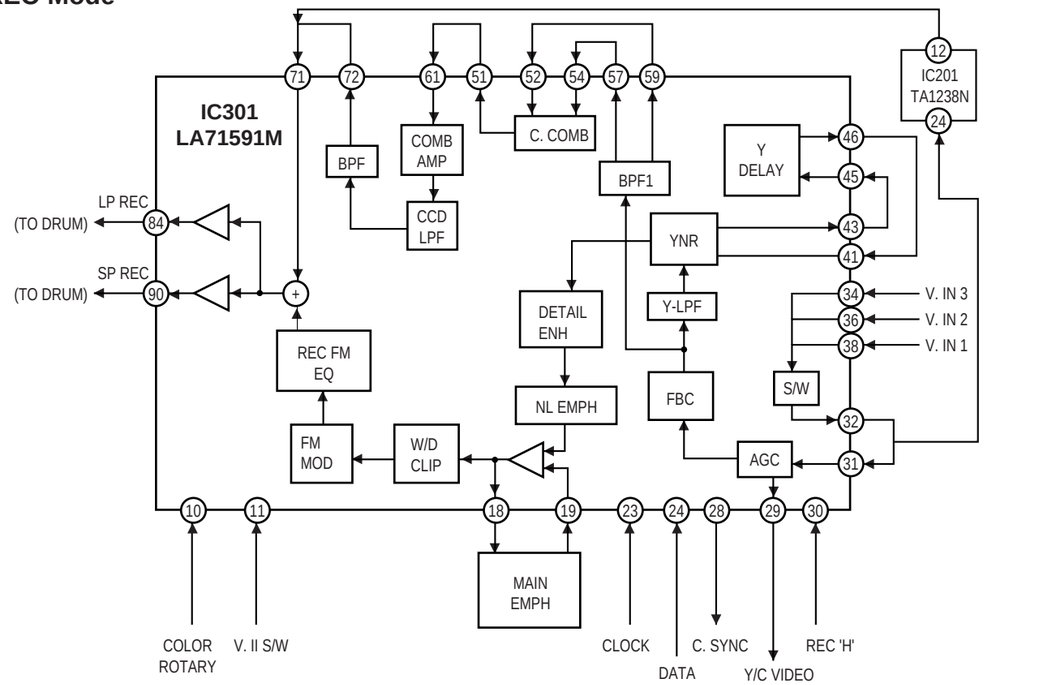


3. Y/C Block Diagram

1) PB Mode

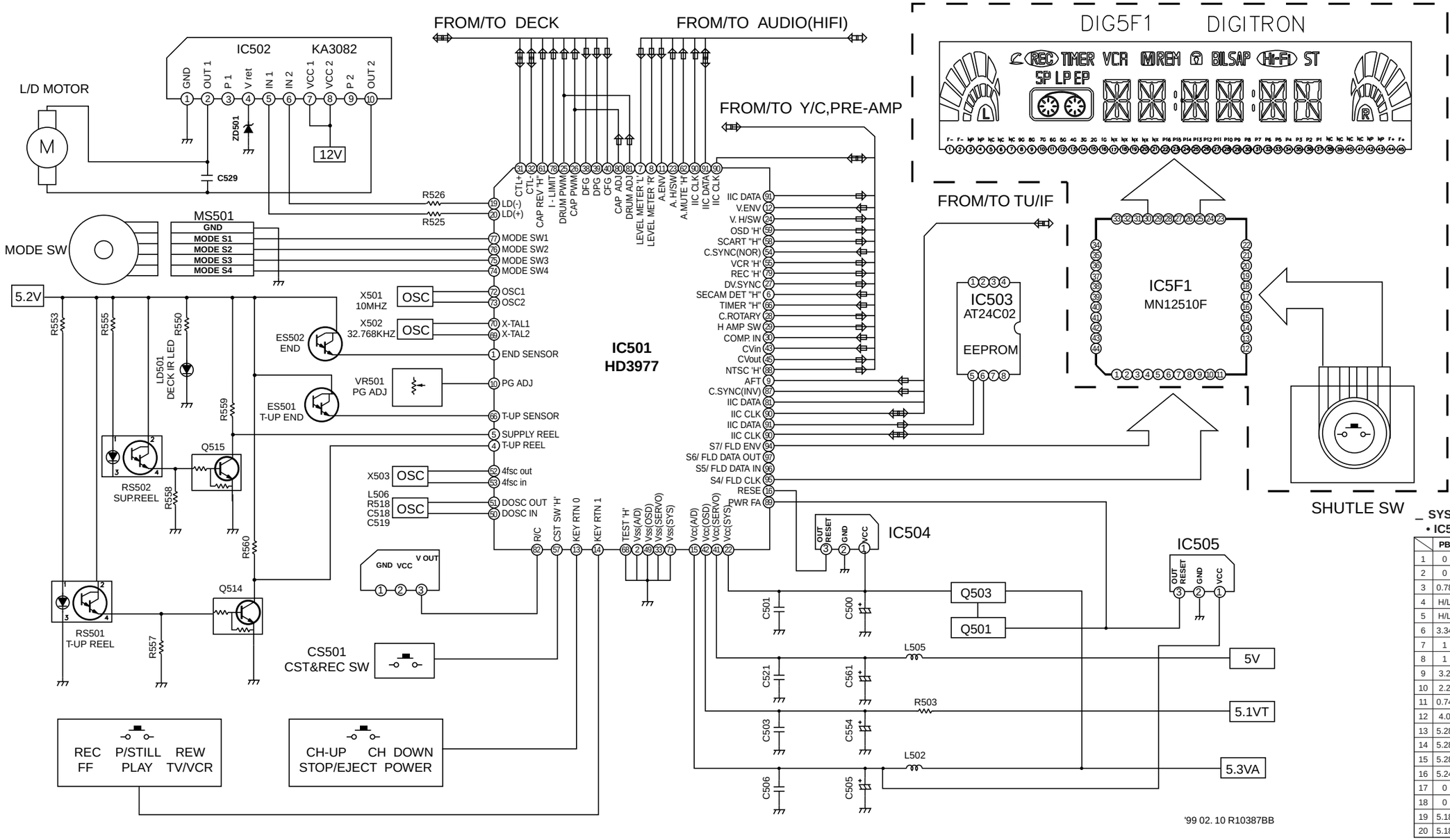


2) REC Mode



'99 02. 10 R10386BB

★ OPTION : DIGITRON MODEL ONLY



_ IC502 Voltage Sheet

PB	0.4	0.8	12.19	12.19	2.16
REC	0.4	0.8	12.19	12.19	2.16
	10	IC502			5
	1				
PB	0	0.4	0.8	0.28	2.16
REC	0	0.4	0.8	0.28	2.16

_ IC503 Voltage Sheet

PB	5.34	0.00	4.60	4.60	
REC	5.34	0.00	5.21	5.21	
		IC503			5
	1				
PB	0.00	0.00	0.00	0.00	
REC	0.00	0.00	0.00	0.00	

_ System IC Voltage Sheet

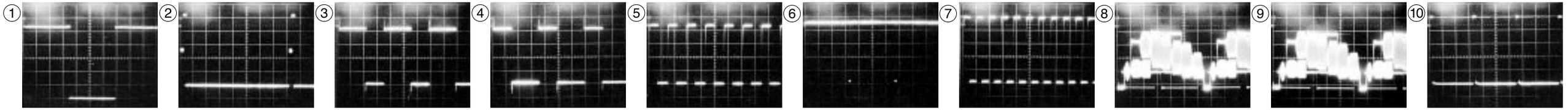
	Emitter		Collector		Base	
	PB	REC	PB	REC	PB	REC
Q514	0	0	H/L	H/L	H/L	H/L
Q515	0	0	H/L	H/L	H/L	H/L
Q506	0	0	0.7	0.7	0.4	0.4
Q503	5.32	5.32	5.25	5.24	4.43	4.43
Q501	0	0	0	0	0.75	0.75

_ SYSTEM IC Voltage Sheet

• IC501(HD3977)

	PB	REC		PB	REC		PB	REC		PB	REC		PB	REC
1	0	0	21	5.24	5.24	41	5.24	5.24	61	0	0	81	2.55	2.55
2	0	0	22	5.24	5.24	42	4.99	4.99	62	0	0	82	5.07	5.07
3	0.78	0.79	23	H/L	H/L	43	2.41	2.37	63	0	0	83	0	0
4	H/L	H/L	24	H/L	H/L	44	1.36	1.36	64	5.21	5.21	84	0	0
5	H/L	H/L	25	2.81	2.81	45	2.43	2.43	65	5.21	5.21	85	0	0
6	3.34	3.3	26	2.73	2.73	46	0	0	66	0	0	86	0	0
7	1	2	27	0	0	47	2.01	2.01	67	4.58	4.58	87	4.7	4.7
8	1	2	28	H/L	H/L	48	1.41	1.41	68	0	0	88	0	0
9	3.2	1.62	29	5.15	5.15	49	0	0	69	1.45	1.45	89	4.87	4.87
10	2.2	2.2	30	4.97	4.88	50	1.32	1.32	70	0.83	0.83	90	5.08	5.08
11	0.74	0	31	2.25	2.99	51	1.35	1.35	71	0	0	91	5.03	5.03
12	4.0	2.3	32	2.25	2.2	52	2.5	2.5	72	2.49	2.47	92	5.28	5.28
13	5.28	5.28	33	0	0	53	2.43	2.43	73	2.47	2.47	93	5.28	5.28
14	5.28	5.28	34	0	0	54	0.38	0.38	74	5.29	5.29	94	4.6	4.6
15	5.28	5.28	35	2.25	2.25	55	5.21	5.21	75	0	0	95	5.2	5.2
16	5.24	5.28	36	2.25	2.25	56	0	0	76	5.29	5.29	96	0	0
17	0	0	37	2.25	2.25	57	5.05	5.05	77	2.29	5.29	97	0	0
18	0	0	38	Pulse	Pulse	58	5.16	5.20	78	3.14	3.15	98	0	0
19	5.18	5.18	39	Pulse	Pulse	59	0	0	79	0	4.84	99	0	0
20	5.18	5.18	40	Pulse	Pulse	60	5.21	5.14	80	2.8	2.8	100	0	0

* IC501 Waveform Photographs



① IC501 Pin 14
1V/5mS
REC/PB modes
(V.H/SW)

② IC501 Pin 27
1V/2mS
QUE/REV modes
(D.V-SYNC)

③ IC501 Pin 31
1V/10mS
REC mode
(CTL+)

④ IC501 Pin 32
1V/10mS
REC mode
(CTL-)

⑤ IC501 Pin 38
1V/1mS
REC/PB mode
(DFG)

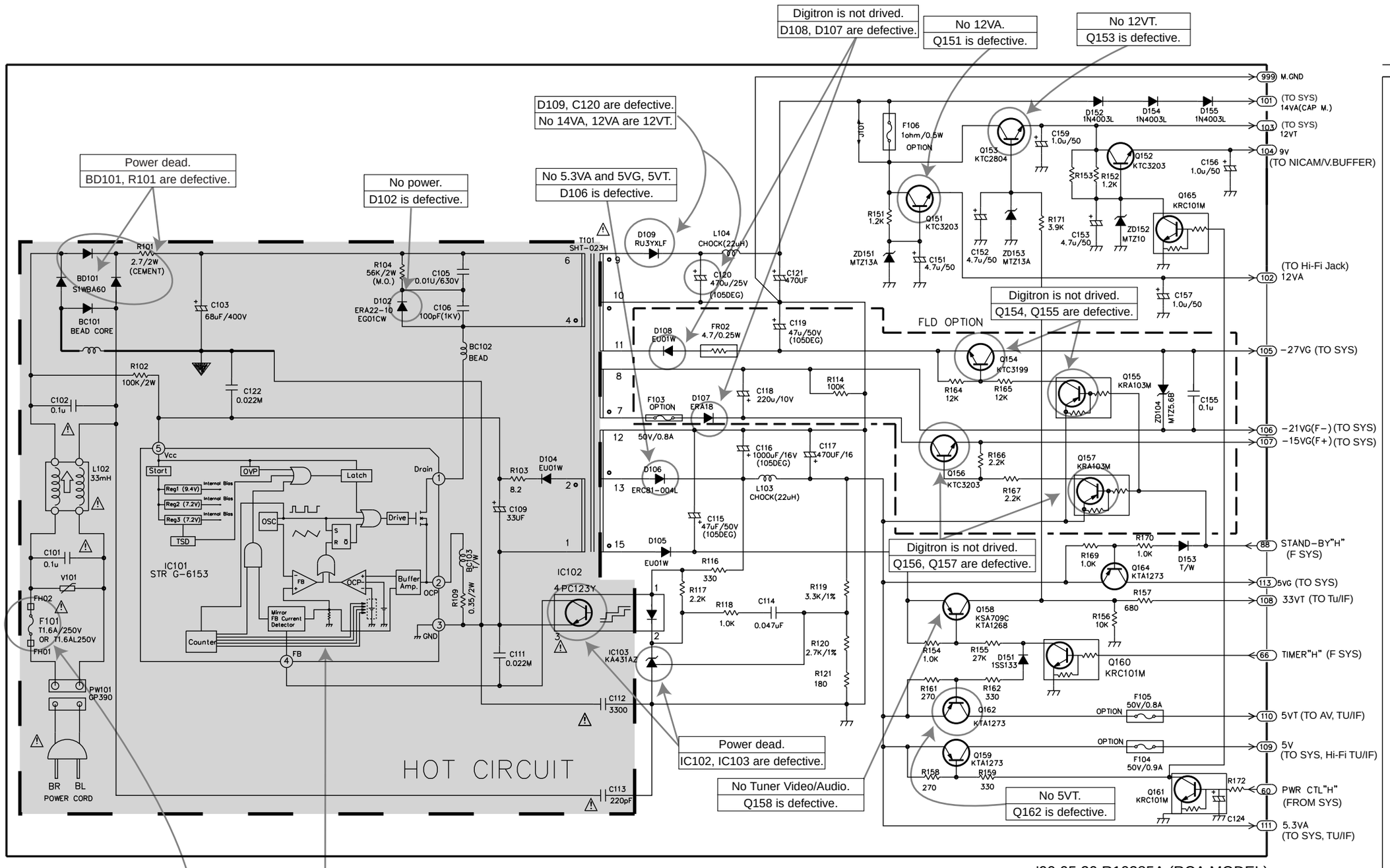
⑥ IC501 Pin 39
1V/10uS
REC/PB modes
(DPG)

⑦ IC501 Pin 40
1V/1mS
REC/PB modes
(CFG)

⑧ IC501 Pin 43
100mV/10uS
EE/PB modes
(V-IN)

⑨ IC501 Pin 45
500MV/10uS
EE/PB modes
(V-OUT)

⑩ IC501 Pin 54
1V/20uS
EE/PB modes
(C-SYNC)



NOTES) ⏚ Symbol denotes AC ground.
⏚ Symbol denotes DC chassis ground.

NOTE) ⚠ Warning
Parts that are shaded are critical
With respect to risk of fire or
electricial shock.

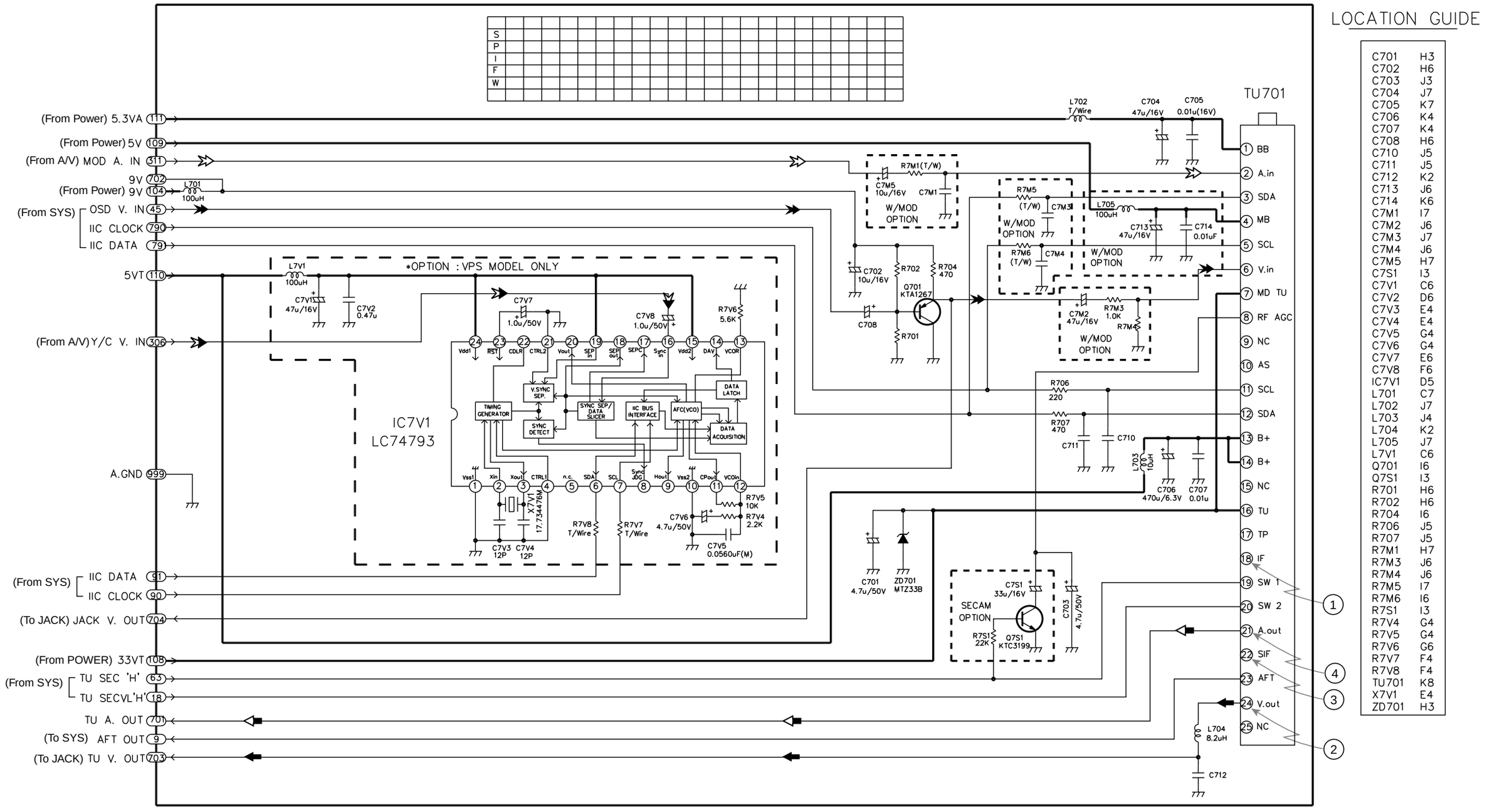
NOTE :
1. Shaded(■) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during TUNER mode.

* OPTION TABLE

NO.	I / F	OTHERS
FR02	0RF0471Q619	O
F103	iCP−N10	O
F104	iCP−N20	X
F105	iCP−N20	X
F106	0RF0101A619	X

LOCATION GUIDE

BC101	B6	Q160	J3
BC102	E6	Q161	J2
BC103	E4	Q162	I3
BD101	B6	Q164	J4
C101	A4	Q165	K7
C102	A5	R101	B7
C103	C6	R102	B6
C105	E6	R103	E5
C106	E6	R104	D6
C109	E4	R109	E4
C111	E3	R114	H5
C112	F3	R116	G4
C113	F2	R117	G4
C114	G4	R118	G4
C115	G4	R119	H4
C116	G5	R120	H3
C117	H5	R121	H3
C118	G5	R151	H7
C119	H6	R152	J7
C120	G6	R153	J7
C121	H6	R154	I3
C122	C5	R155	I3
C151	I6	R156	J4
C152	I7	R157	J4
C153	J7	R158	I2
C155	K5	R159	I2
C156	K7	R161	I3
C157	K6	R162	I3
C159	J8	R164	I5
D102	D6	R165	I5
D104	E5	R166	I5
D105	F4	R167	I5
D106	F5	R169	J4
D107	G5	R170	J4
D108	F6	R171	J7
D109	F7	T101	F7
D151	I3	V101	B4
D152	J8	ZD104	K5
D153	K4	ZD151	H7
D154	J8	ZD152	J7
D155	K8	ZD153	I7
F103	F5		
F104	J2		
F105	J3		
F106	H8		
FH01	A3		
FH02	A4		
FR02	G6		
IC101	B4		
IC102	F4		
IC103	F3		
J101	H8		
L102	B5		
L103	G5		
L104	G7		
PW101	B3		
Q151	I7		
Q152	J7		
Q153	I7		
Q154	I6		
Q155	J6		
Q156	I5		
Q157	J5		
Q158	I4		
Q159	I2		

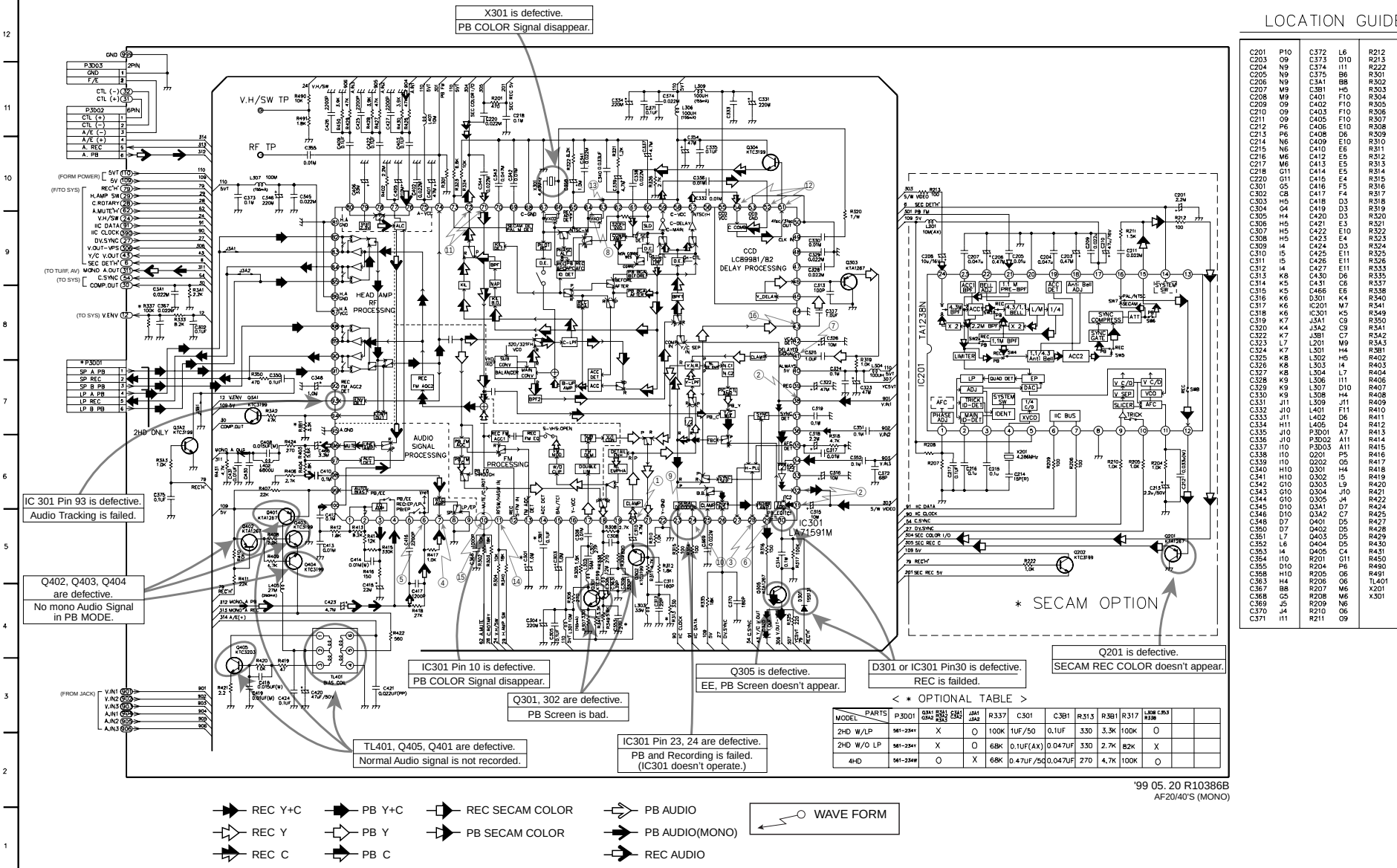


LOCATION GUIDE

C701	H3
C702	H6
C703	J3
C704	J7
C705	K7
C706	K4
C707	K4
C708	H6
C710	J5
C711	J5
C712	K2
C713	J6
C714	K6
C7M1	I7
C7M2	J6
C7M3	J7
C7M4	J6
C7M5	H7
C7S1	I3
C7V1	C6
C7V2	D6
C7V3	E4
C7V4	E4
C7V5	G4
C7V6	G4
C7V7	E6
C7V8	F6
IC7V1	D5
L701	C7
L702	J7
L703	J4
L704	K2
L705	J7
L7V1	C6
Q701	I6
Q7S1	I3
R701	H6
R702	H6
R704	I6
R706	J5
R707	J5
R7M1	H7
R7M3	J6
R7M4	J6
R7M5	I7
R7M6	I6
R7S1	I3
R7V4	G4
R7V5	G4
R7V6	G6
R7V7	F4
R7V8	F4
TU701	K8
X7V1	E4
ZD701	H3

'99 05. 20 R10388B
AF49/29'S

3. A/V Circuit Diagram

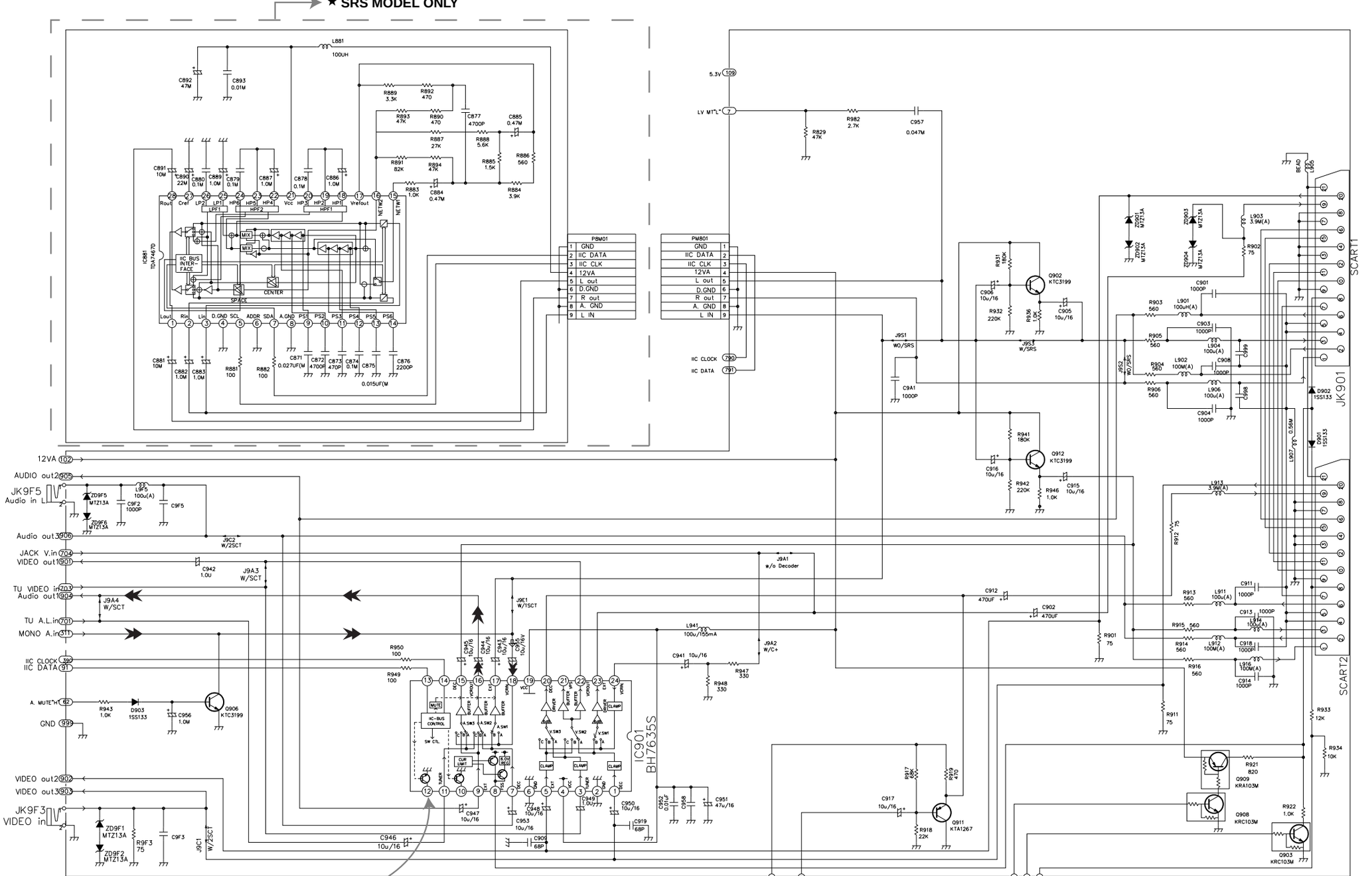


MODEL / PARTS	P3D01	Q3A1 Q3B1 Q3A2 Q3B2	C3A1 C3C2	J3A1 J3A2	R337	C301	C3B1	R313	R3B1	R317	L308 C353 R338		
2HD W/LP	561-234*	X	O		100K	1UF/50	0.1UF	330	3.3K	100K	O		
2HD W/O LP	561-234*	X	O		68K	0.1UF(AX)	0.047UF	330	2.7K	82K	X		
4HD	561-234#	O	X		68K	0.47UF/50	0.047UF	270	4.7K	100K	O		

'99 05. 20 R10386B
AF20/40'S (MONO)

LOCATION GUIDE

C201	P10	C372	L6	R212	P9
C203	O9	C373	D10	R213	M10
C204	N9	C374	I11	R222	N5
C205	N9	C375	B8	R301	F10
C206	N9	C3A1	B8	R302	G5
C207	M9	C3B1	H5	R303	G5
C208	M9	C401	F10	R304	G4
C209	O9	C402	F10	R305	H5
C210	O9	C403	F10	R306	H4
C211	O9	C405	F10	R307	H4
C212	P6	C406	E10	R308	H5
C213	P6	C408	D6	R309	I5
C214	N6	C409	E10	R310	I5
C215	N6	C410	E6	R311	I5
C216	M6	C412	E6	R312	I5
C217	M6	C413	E5	R313	I4
C218	G11	C414	E5	R314	J5
C220	G11	C415	E4	R315	I5
C301	G5	C416	F5	R316	K5
C302	C8	C417	F4	R317	K5
C303	H5	C418	D3	R318	K6
C304	G4	C419	D3	R319	L7
C305	H4	C420	D3	R320	L9
C306	H5	C421	E3	R321	I10
C307	H5	C422	E10	R322	H10
C308	H5	C423	E4	R323	F10
C309	I4	C424	D3	R324	G10
C310	I5	C425	E11	R325	K4
C311	I5	C426	E11	R326	I10
C312	I4	C427	E11	R333	C8
C313	K8	C430	D6	R335	J4
C314	K5	C431	D6	R337	B8
C315	K5	C466	E6	R338	H5
C316	K6	D301	K4	R340	G4
C317	K6	IC201	M7	R341	H4
C318	K6	IC301	K5	R349	H4
C319	K7	J3A1	C9	R350	D7
C320	K4	J3A2	C9	R3A1	C8
C322	K7	J3B1	C7	R3A2	D7
C323	L7	L201	M9	R3A3	B6
C324	K7	L301	H4	R3B1	D7
C325	K8	L302	H5	R402	E10
C326	K8	L303	I4	R403	D6
C327	K8	L304	L7	R404	D6
C328	K9	L306	I11	R406	D6
C329	K9	L307	D10	R407	D6
C330	K9	L308	H4	R408	D5
C331	J11	L309	J11	R409	D5
C332	J10	L401	F11	R410	C5
C333	J11	L402	D6	R411	C5
C334	H11	L405	D4	R412	E6
C335	J10	P3D01	A7	R413	E5
C336	J10	P3D02	A11	R414	E6
C337	I10	P3D03	A11	R415	E5
C338	I10	Q201	P5	R416	E5
C339	I10	Q202	Q5	R417	F5
C340	H10	Q301	H6	R418	F4
C341	H10	Q302	I5	R419	D3
C342	G10	Q303	L9	R420	D3
C343	G10	Q304	J10	R421	C3
C344	G10	Q305	J4	R422	F4
C345	D10	Q3A1	D7	R424	D6
C346	D10	Q3A2	C7	R425	F11
C348	D7	Q401	D5	R427	E11
C350	D7	Q402	D5	R428	E11
C351	L7	Q403	D5	R429	E11
C352	L6	Q404	D5	R430	F11
C353	I4	Q405	C4	R431	D6
C354	I10	R201	G11	R450	E11
C355	D10	R204	P6	R490	D11
C358	H10	R205	Q6	R491	D11
C363	H4	R206	Q6	TL401	E3
C367	B8	R207	M6	X201	N6
C368	G5	R208	M6	X301	G10
C369	J5	R209	N6		
C370	J4	R210	O6		
C371	I11	R211	O9		



	HiFi/C+	HiFi/2SCART	HiFi/1SCART	MONO/C+	MONO/2SCART	MONO/1SCART	MONO/RCA
V.out1	SW V.in	SW V.in	TUNER V.in	SW V.in	TUNER V.in	TUNER V.in	-----
V.out2	/	/	E1 V.in	/	E1 V.in	E1 V.in	REAR V.in
V.out3	FRONT V.in	FRONT V.in	FRONT V.in	FRONT V.in	E2 V.in	(FRONT V.in)	-----
A.out1	MONO A.out	MONO A.out	MONO A.out	SW A.in	TUNER A.in	TUNER A.in	-----
A.out2	/	/	/	/	E1 A.in	E1 A.in	REAR A.in
A.out3	/	/	/	FRONT A.in	E2 A.in	(FRONT A.in)	-----

LOCATION GUIDE

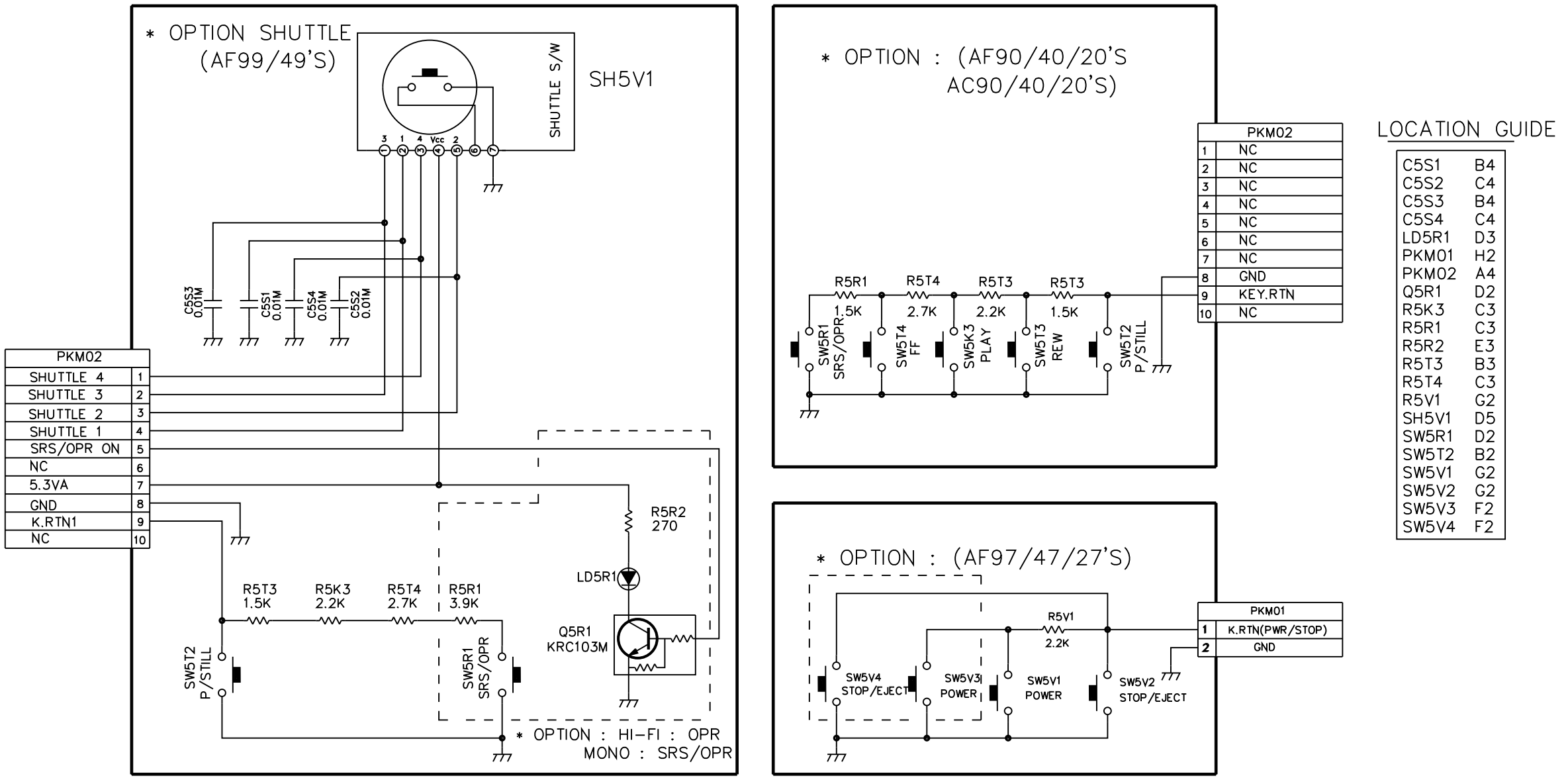
C871	D8	L941	I5
C872	E8	L9F5	C6
C873	E8	P8M01	H9
C874	E8	PM801	I9
C875	E8	Q902	M9
C876	F8	Q903	P2
C877	G11	Q906	D4
C878	D10	Q908	P2
C879	D10	Q909	P3
C880	C10	Q911	L2
C881	C8	Q912	M7
C882	C8	R829	K10
C883	C8	R881	D8
C884	F10	R882	D8
C885	G11	R883	F10
C886	E10	R884	G10
C887	D10	R885	G10
C889	C10	R886	G10
C890	C10	R887	F10
C891	C10	R888	G10
C892	C11	R889	F11
C893	D11	R890	F11
C901	O9	R891	F10
C902	M5	R892	F11
C903	O8	R893	F11
C904	O7	R894	F10
C905	M8	R901	N5
C906	M9	R902	P9
C908	O8	R903	O8
C909	G2	R904	O8
C911	P5	R905	O8
C912	M5	R906	O7
C913	P5	R911	O4
C914	N4	R912	O6
C915	N6	R913	O5
C916	M7	R914	O4
C917	K3	R915	O5
C918	P4	R916	O4
C919	H2	R917	L3
C941	I4	R918	L2
C942	C5	R919	L3
C943	G4	R921	P3
C944	G4	R922	P3
C945	G4	R931	M9
C946	F2	R932	M8
C947	G2	R933	O4
C948	G3	R934	O3
C949	H3	R936	M8
C950	H3	R941	M7
C951	I3	R942	M6
C952	I3	R943	B4
C953	G2	R946	M6
C955	G4	R947	J4
C956	C4	R948	I4
C957	L11	R949	F4
C958	I3	R950	F4
C998	P7	R982	K11
C999	P8	RF3	C2
C9A1	L7	ZD901	N9
C9F2	C6	ZD902	N9
C9F3	C2	ZD903	O9
C9F5	C6	ZD904	O9
D901	Q7	ZD9F1	B2
D902	Q7	ZD9F2	B2
D903	C4	ZD9F5	B6
IC881	C9	ZD9F6	B6
IC901	I3		
J9A1	J5		
J9A2	J4		
J9A3	D5		
J9A4	B5		
J9C1	C2		
J9C2	D6		
J9E1	G5		
J9S1	L8		
J9S2	N8		
J9S3	M8		
JK901	O7		
JK9F3	A2		
JK9F5	A6		
L881	E12		
L901	O8		
L902	O8		
L903	P9		
L904	O8		
L905	P10		
L906	O7		
L907	P7		
L911	O5		
L912	O4		
L913	O6		
L914	P5		
L916	P4		

_IC901 Voltage Sheet

PB	3.6	4.4	4.2	0.9	5.1	0.0	0.0	0.7	0.6	0.7	11.9	3.9
REC	1.9	4.4	4.1	0.9	5.0	0.0	4.2	4.3	4.2	4.3	12.0	3.9
					20					15		

IC901(BH7635S)

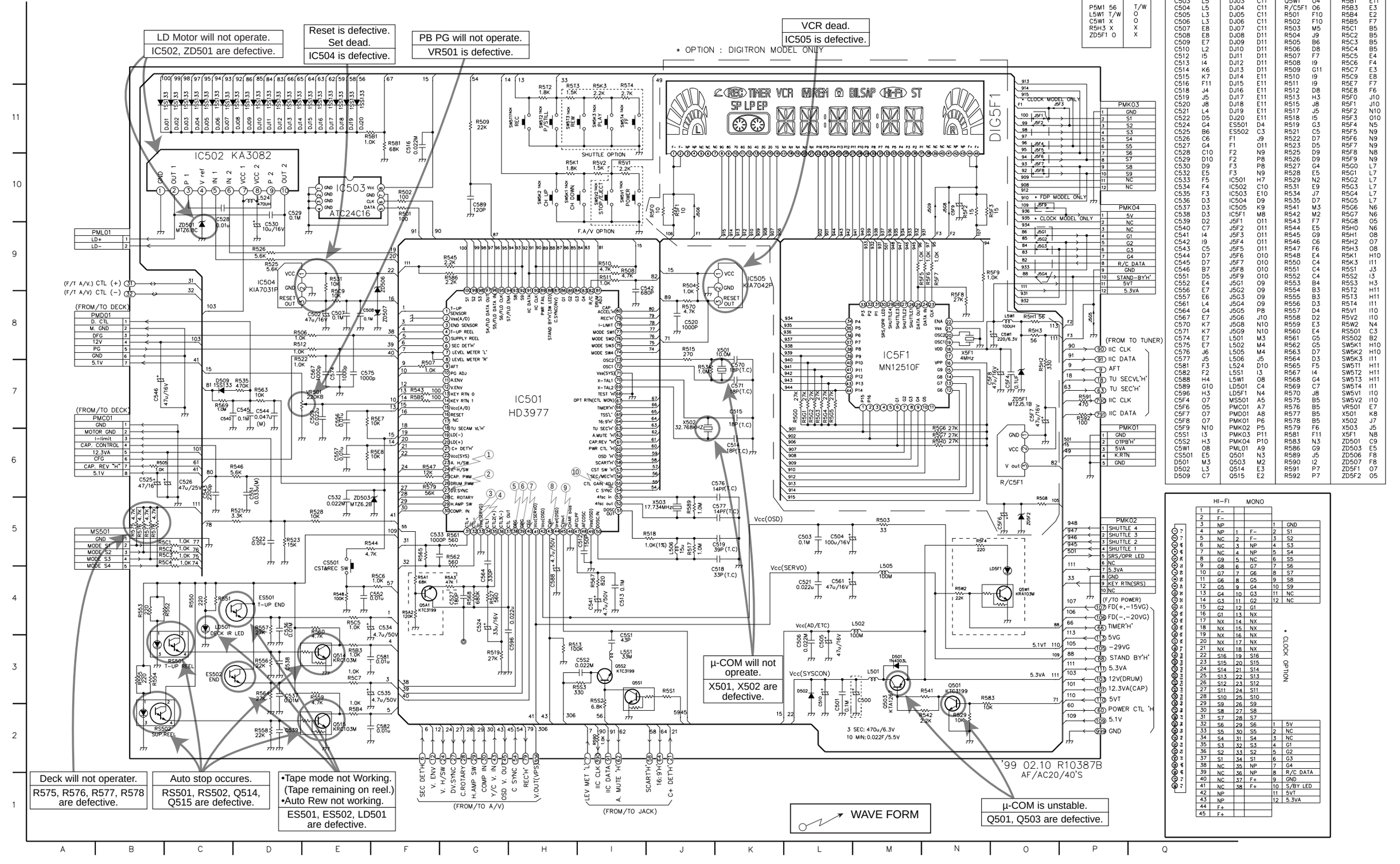
					5					10		
PB	3.8	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	0.0
REC	3.8	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.9	3.9	0.0



LOCATION GUIDE

C5S1	B4
C5S2	C4
C5S3	B4
C5S4	C4
LD5R1	D3
PKM01	H2
PKM02	A4
Q5R1	D2
R5K3	C3
R5R1	C3
R5R2	E3
R5T3	B3
R5T4	C3
R5V1	G2
SH5V1	D5
SW5R1	D2
SW5T2	B2
SW5V1	G2
SW5V2	G2
SW5V3	F2
SW5V4	F2

'99 02.10 R10393B
ACF9,4,20'S


LD Motor will not operate.
IC502, ZD501 are defective.
Reset is defective.
Set dead.
IC504 is defective.
PB PG will not operate.
VR501 is defective.
VCR dead.
IC505 is defective.
* OPTION : DIGITRON MODEL ONLY
IC502 KA3082
IC503 ATC24C16
IC504 KIA7031P
IC505 KIA7042P
IC501 HD3977
IC5F1 MN12510F
DIC5F1
SHUTTLE OPTION
F.A/V OPTION
* CLOCK MODEL ONLY
* FDP MODEL ONLY
(FROM/TO DECK)
(FROM/TO TUNER)
(FROM/TO A/V)
(FROM/TO JACK)
ES501 T-UP END
ES502 END
LD501 DECK IR LED
RS501 T-UP REEL
RS502 SUP.REEL
CS501 CST&REC SW
µ-COM will not opreate.
X501, X502 are defective.
µ-COM is unstable.
Q501, Q503 are defective.
Deck will not operater.
R575, R576, R577, R578 are defective.
Auto stop occures.
RS501, RS502, Q514, Q515 are defective.
•Tape mode not Working. (Tape remaining on reel.)
•Auto Rew not working.
ES501, ES502, LD501 are defective.
WAVE FORM
'99 02.10 R10387B
AF/AC20/40'S
3 SEC: 470u/6.3V
10 MIN: 0.022F/5.5V
* CLOCK OPTION
HI-FI
MONO

SECTION 4 MECHANISM

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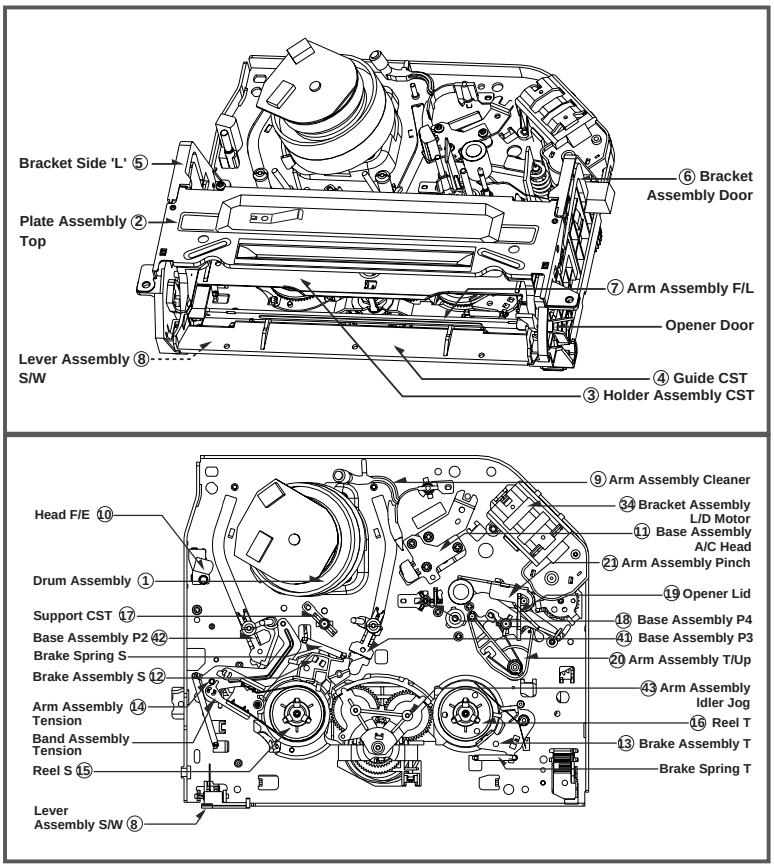
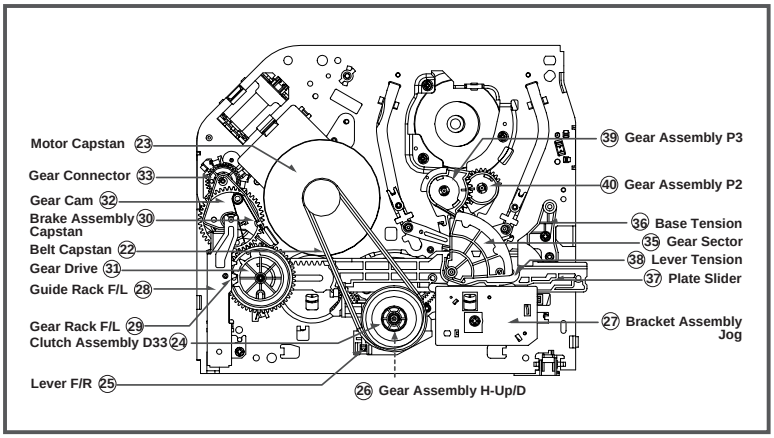
DECK MECHANISM PARTS LOCATIONS

• Top View



Starting No. \ Procedure		Part	Fixing Type	Figure
	1	Drum Assembly	3 Screws , Cap FPC	A-1
	2	Plate Assembly Top	Two Hooks	A-2
2	3	Holder Assembly CST	Chassis Hole	A-2
	4	Guide CST	2 Hooks	A-2
2,3,4	5	Bracket Side (L)	1 Screw	A-2
2,3,4	6	Bracket Assembly Door	1 Screw	A-2
2,3,4,5,6	7	Arm Assembly F/L	Chassis Hole	A-2
2,3,4,5	8	Lever Assembly S/W	Chassis Hole	A-2
	9	Arm Assembly Cleaner	Chassis Embossing	A-3
	10	Head F/E	2 Hooks	A-3
	11	Base Assembly A/C Head	1 Screw	A-3
	12	Brake Assembly S	Chassis Hole	A-4
2,3	13	Brake Assembly T	Chassis Hole	A-4
2,3,12,	14	Arm Assembly Tension	Chassis Hole	A-4
2,3,12,14	15	Reel S	Chassis Shaft	A-4
2,3,13	16	Reel T	Chassis Shaft	A-4
	17	Support CST	Chassis Embossing	A-5
	18	Base Assembly P4	Chassis Embossing	A-5
	19	Opener Lid	Chassis Embossing	A-5
19	20	Arm Assembly T/Up	Chassis Embossing	A-5
19	21	Arm Assembly Pinch	Chassis Shaft	A-5

• Bottom View



Starting No. \ Procedure		Part	Fixing Type	Figure
	22	Belt Capstan		A-6
22	23	Motor Capstan	3 Screws	A-6
	24	Clutch Assembly D33	1 Washer	A-6
22,24	25	Lever F/R	1 Hook	A-6
22,24	26	Gear Assembly H-Up/D	2 Washers	A-6
	27	Bracket Assembly Jog	1 Screw	A-7
	28	Guide Rack F/L	1Screw	A-7
28	29	Gear Rack F/L		A-7
28, 29	30	Brake Assembly Capstan	Chassis Shaft	A-7
28, 29	31	Gear Drive	1 Washer	A-8
28, 29, 30	32	Gear Cam	Chassis Shaft	A-8
28, 29, 30, 31	33	Gear Connector	Chassis Shaft	A-8
	34	Bracket Assembly L/D Motor	3 Hooks	A-8
	35	Gear Sector	3 Washers	A-9
	36	BaseTension	1 Screw	A-9
22, 24, 25, 27	37	Plate Slider	Chassis Shaft	A-9
28, 29, 31, 35				
36				
22, 24, 25, 27				
28, 29, 31, 35	38	Lever Tension	Chassis Hole	A-9
36				
35	39	Gear Assembly P3	2 Hooks	A-10
35, 39	40	Gear Assembly P2	2 Hooks	A-10
35, 39, 40	41	Base Assembly P3	Chassis Hole	A-10
35, 39, 40, 41	42	Base Assembly P2	Chassis Hole	A-10
1, 2	43	Arm Assembly Idler Jog	1 Hook	A-10

NOTE : When reassembly perform the procedure in the reverse order.

1) When reassembling, confirm Mechanism and Mode Switch Alignment Position (Pefer to Page 4-14)
2) When disassembling, the Parts for Starting No. Should be removed first.

DECK MECHANISM DISASSEMBLY

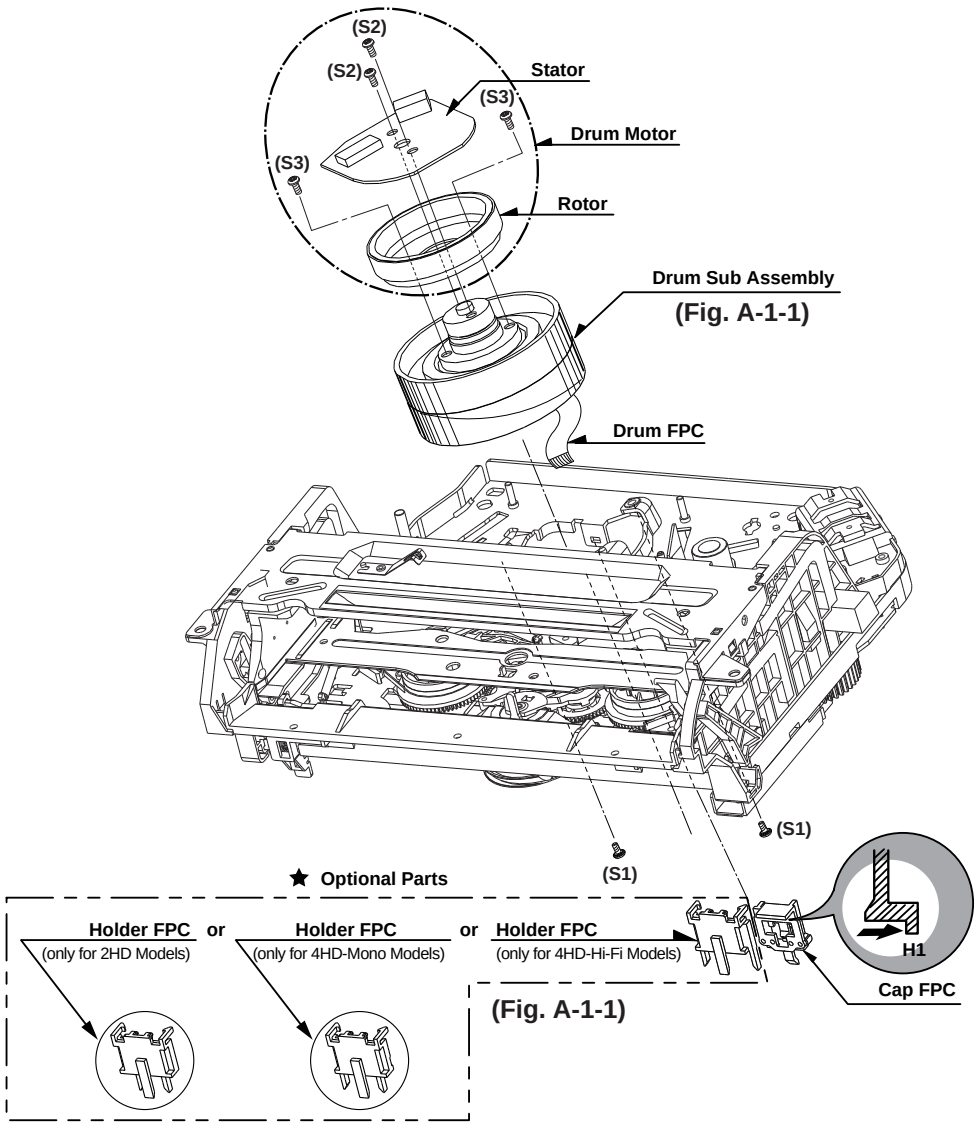


Fig. A-1

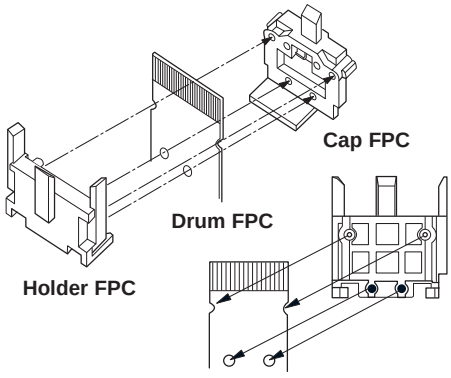
1. Drum Assembly (Fig. A-1-1)

1) Unhook the (H1) on the back side of the Chassis and separate the Cap FPC.
2) Remove three Screws (S1) and lift up the Drum Assembly.
3) Remove two Screws (S2) and Separate the Stator of Drum Motor.
4) Remove two Screws (S3) and Separate the Rotor of Drum Motor from the Drum Sub Assembly.

NOTE

(1) When reassembling Cap FPC, two Holes of Drum FPC are inserted to the two Bosses of Holder FPC correctly. (Refer to Fig. B-1)

(Fig. B-1)



DECK MECHANISM DISASSEMBLY

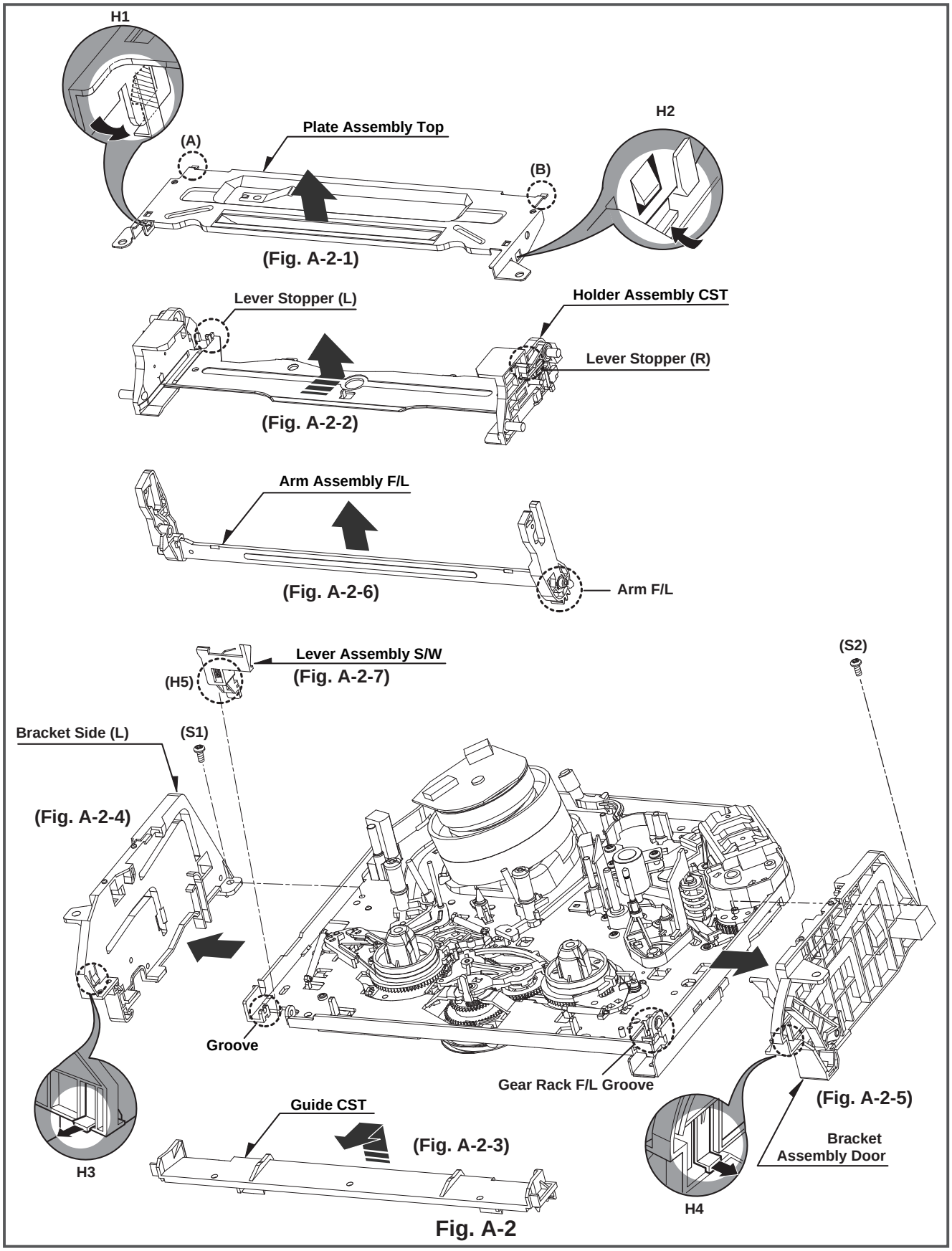


Fig. A-2

DECK MECHANISM DISASSEMBLY

2. Plate Assembly Top (Fig. A-2-1)

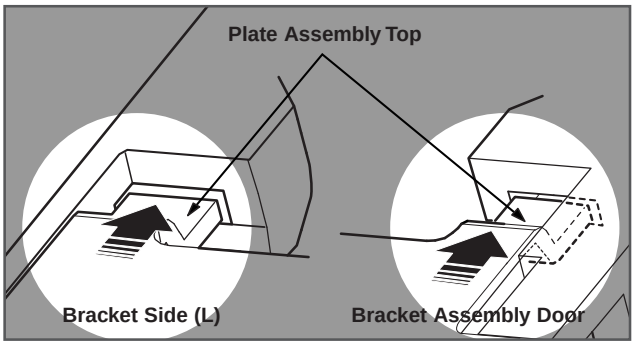
1) Unhook the (H1) and separate the Left Side.
2) Unhook the (H2) and lift up the Plate Assembly Top.

NOTE

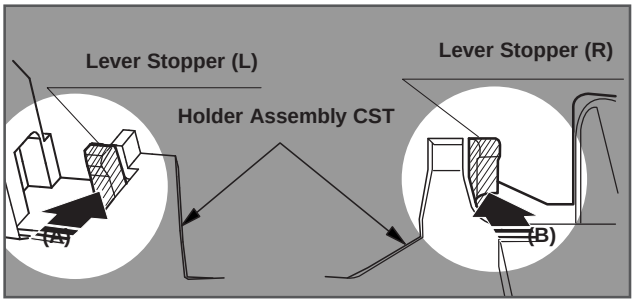
(1) When reassembling, confirm (A),(B) Part of the Plate Assembly Top is inserted to the (L),(R) Grooves of the Bracket Side(L) and Bracket Assembly Door.

3. Holder Assembly CST (Fig.A-2-2)

1) Push the Lever Stopper(L),(R) in the direction of the arrows (A), (B), and move the Holder Assembly CST.

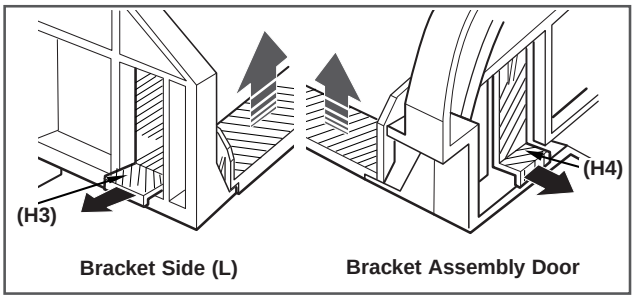


2) Push the Bracket Assembly Door to the right and lift up the Holder Assembly CST along the Guide Groove of the Bracket Assembly Door.



4. Guide CST (Fig.A-2-3)

1) Push two Hooks(H3),(H4) in the direction of the arrow and separate the left side.
2) Unhook (H5),(H6) as above No.1) and disassemble the Guide CST in the direction of the arrow.



5. Bracket Side(L) (Fig. A-2-4)/ Bracket Assembly Door (Fig.A-2-5)

1) Remove the Screw (S1) and disassemble the Bracket Side(L) in the front.
2) Remove the Screw (S2) and disassemble the Bracket Assembly Door in the front.

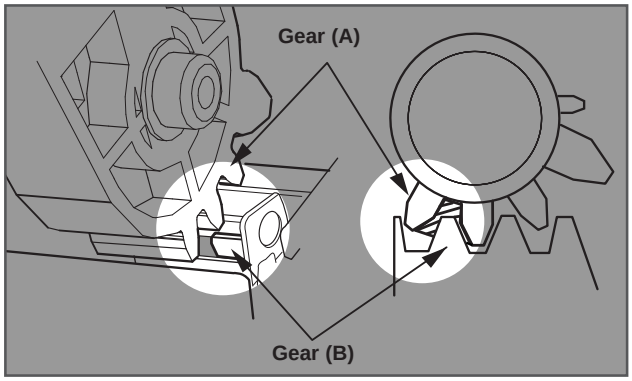
6. Arm Assembly F/L (Fig. A-2-6)

1) Push the Arm Assembly F/L to the left and lift up it.

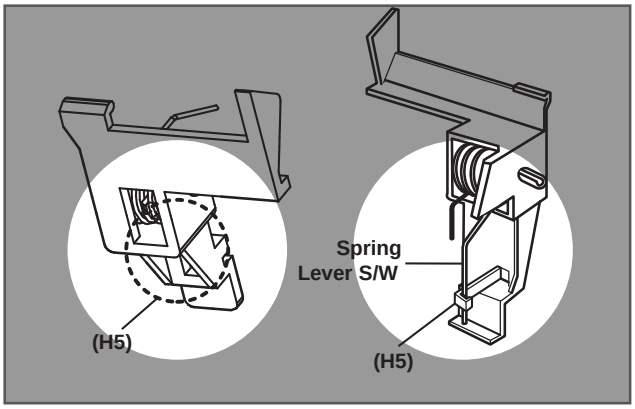
NOTE

(1) When reassembling, confirm that the Gear(A) of the Arm F/L and the Gear(B) of the Gear Rack F/L are assembled as below.

7. Lever Assembly S/W (Fig. A-2-7)

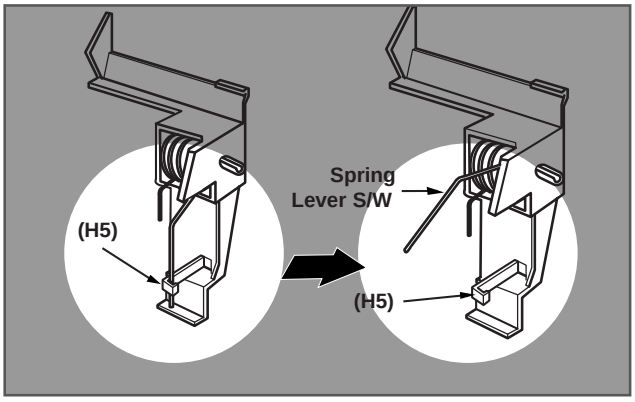


1) Hook the Spring Lever S/W on (H5).
2) Lift up the left side of the Lever S/W from the Groove(A) of the Chassis.



NOTE

(1) Place the Spring Lever S/W of the above (No.1) as original position.



DECK MECHANISM DISASSEMBLY

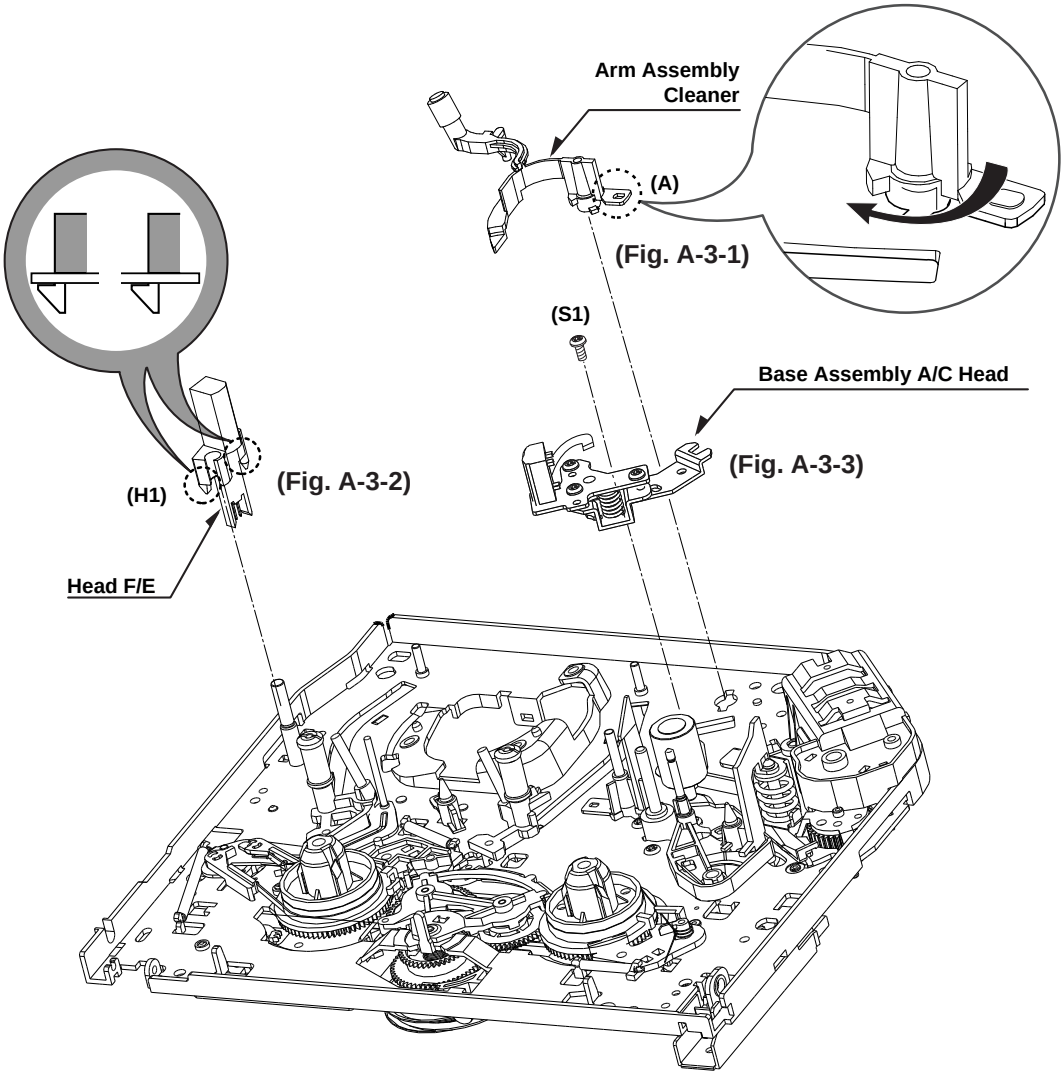


Fig. A-3

8. Arm Assembly Cleaner(Fig. A-3-1)

1) Break away the (A) part shown above Fig. A-3-1 from the Embossing of the Chassis in the clockwise direction and lift up the Arm Assembly Cleaner.

9. Head F/E (Fig. A-3-2)

1) Unhook the two Hooks (H1) on the back side of the Chassis and lift up the Head F/E.

10. Base Assembly A/C Head (Fig. A-3-3)

1) Remove the Screw (S1) and lift up the Base Assembly A/C Head.

DECK MECHANISM DISASSEMBLY

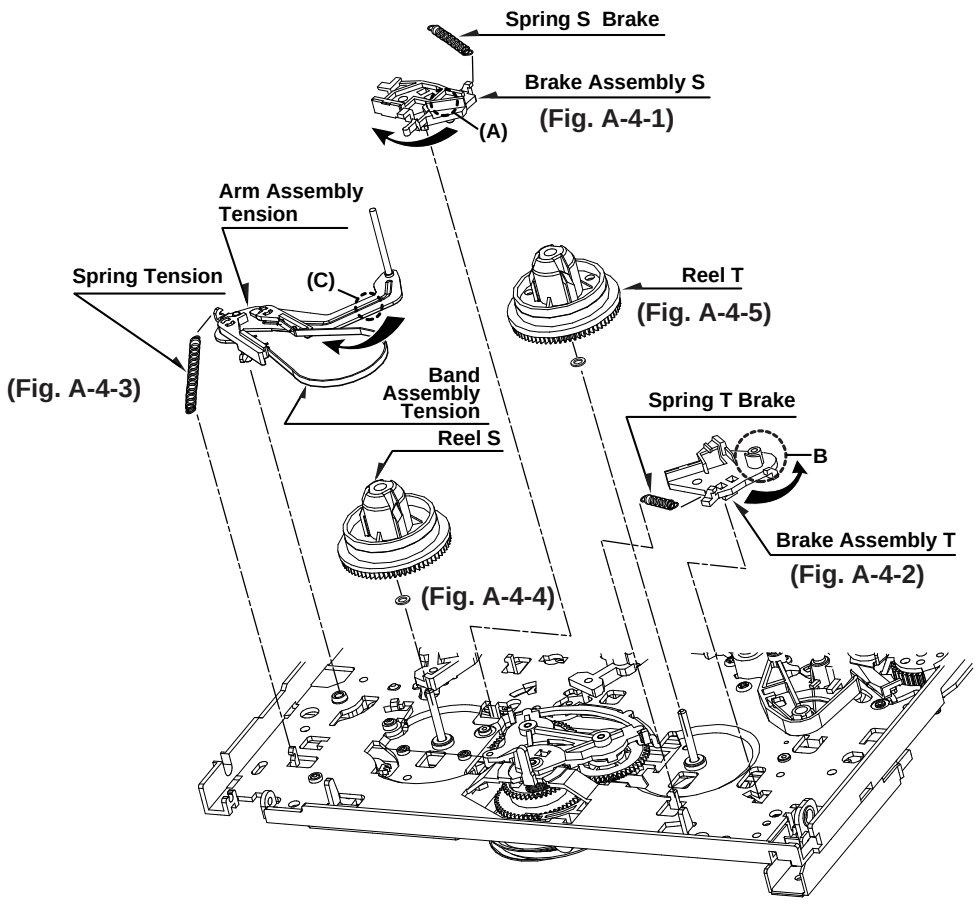


Fig. A-4

11. Brake Assembly S (Fig. A-4-1)

1) Remove the Spring S Brake.
2) Hold the (A) part shown above Fig. A-4-1 and turn to the clockwise direction, and then lift up the Brake Assembly S.

NOTE

(1) When reassembling, be careful not to change the Spring with below No.12.(Refer to Fig. B-2).

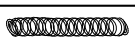
12. Brake Assembly T (Fig. A-4-2)

1) Remove the Spring T Brake.
2) Hold the (B) part shown above Fig. A-4-2 and turn to the counterclockwise direction, and then lift up the Brake Assembly T.

NOTE

(1) When reassembling, be careful not to change the Spring with above No.11.(Refer to Fig. B-2).

(Difference for Springs) **(Fig. B-2)**

	Spring T Brake Color (Black)
	Spring S Brake
	**Spring Tension**

13. Arm Assembly Tension (Fig. A-4-3)

1) Remove the Spring Tension.
2) Hold the (C) part shown above Fig. A-4-3 and turn to the clockwise direction, and then lift up the Arm Assembly Tension.

NOTE

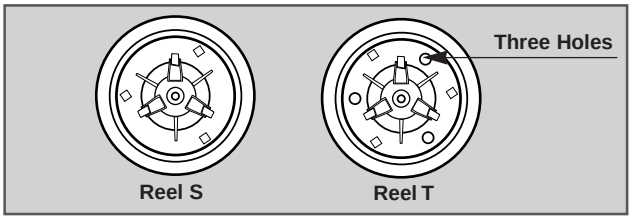
(1) When reassembling, be careful not to change the Spring with above No.11,12.(Refer to Fig. B-2).

14. Reel S (Fig. A-4-4) & Reel T (Fig. A-4-5)

1) Lift up the Reel S and Reel T.

NOTE

(1) When reassembling, be careful not to change the Reel S and Reel T each other.



(2) Confirm two Slide Washers under the Reel S and Reel T.

DECK MECHANISM DISASSEMBLY

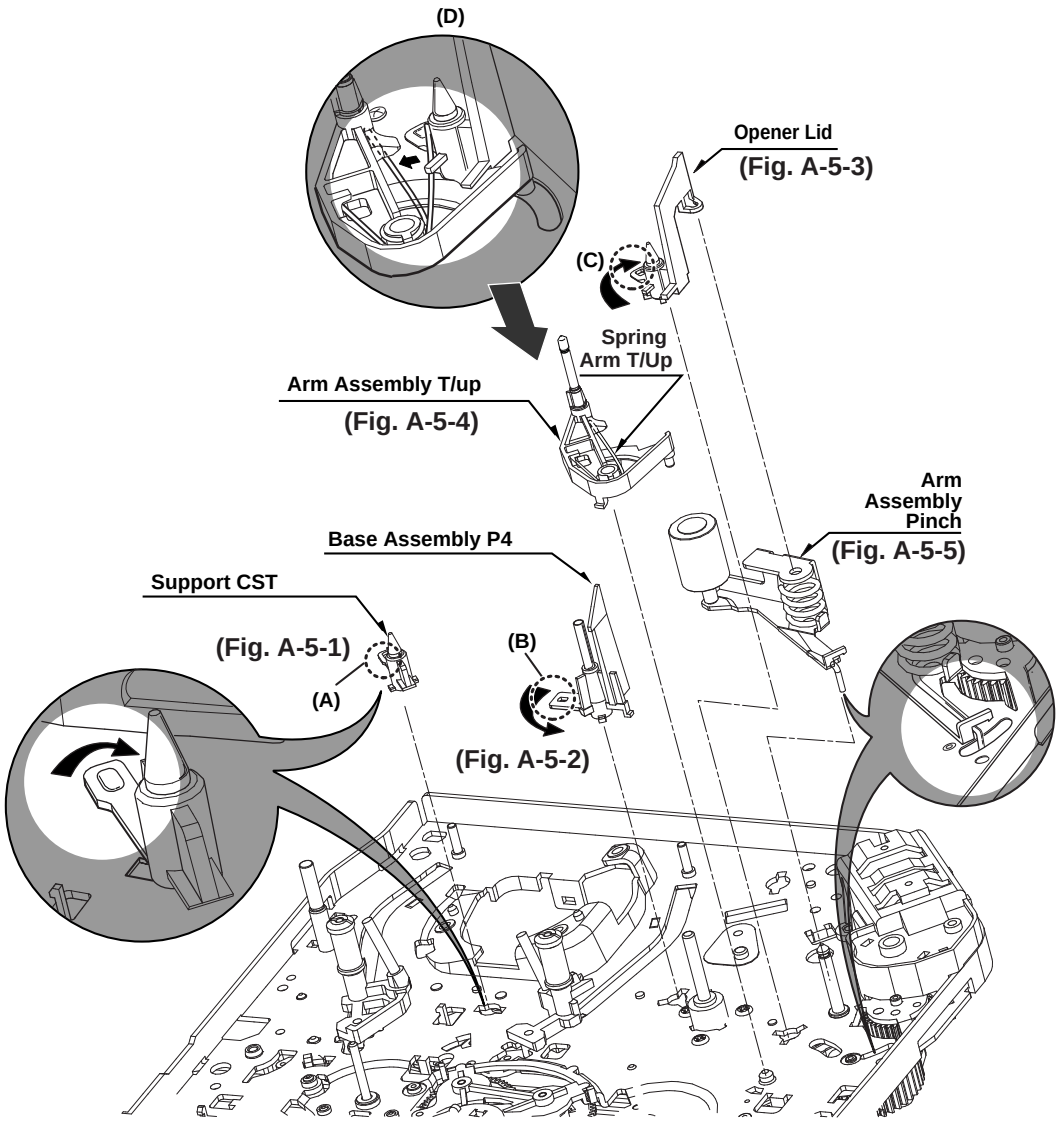


Fig. A-5

15. Support CST (Fig. A-5-1)

1) Break away the (A) part shown above Fig. A-5-1 from the Embossing of the Chassis in the clockwise direction, and lift up the Support CST.

16. Base Assembly P4 (Fig. A-5-2)

1) Break away the (B) part shown above Fig. A-5-2 from the Embossing of the Chassis in the counterclockwise direction and lift up the Base Assembly P4.

17. Opener Lid (Fig. A-5-3)

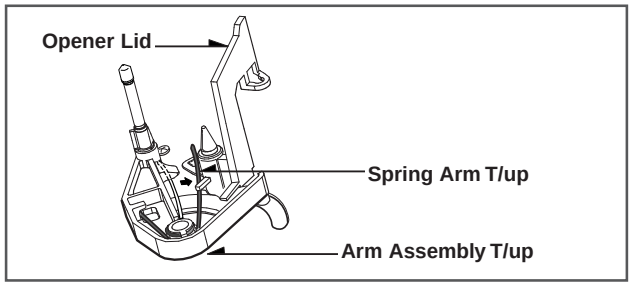
1) Hook the Spring Arm T/up on the Split digged under the Arm Assembly T/up.(Refer to Fig.A-5-4(D)).
2) Break away the (C) Part of the Opener Lid from the Embossing of the Chassis in the Clockwise direction and lift up the Opener Lid.

18. Arm Assembly T/up (Fig. A-5-4)

1) Confirm that the Spring Arm T/up is placed as above (No.17.1).
2) Lift up the Arm Assembly T/up.

NOTE

(1) When reassembling, unhook the Spring Arm T/up Shown above (No.17.1) to the original position.



19. Arm Assembly Pinch (Fig. A-5-5)

1) Lift up the Arm Assembly Pinch.

DECK MECHANISM DISASSEMBLY

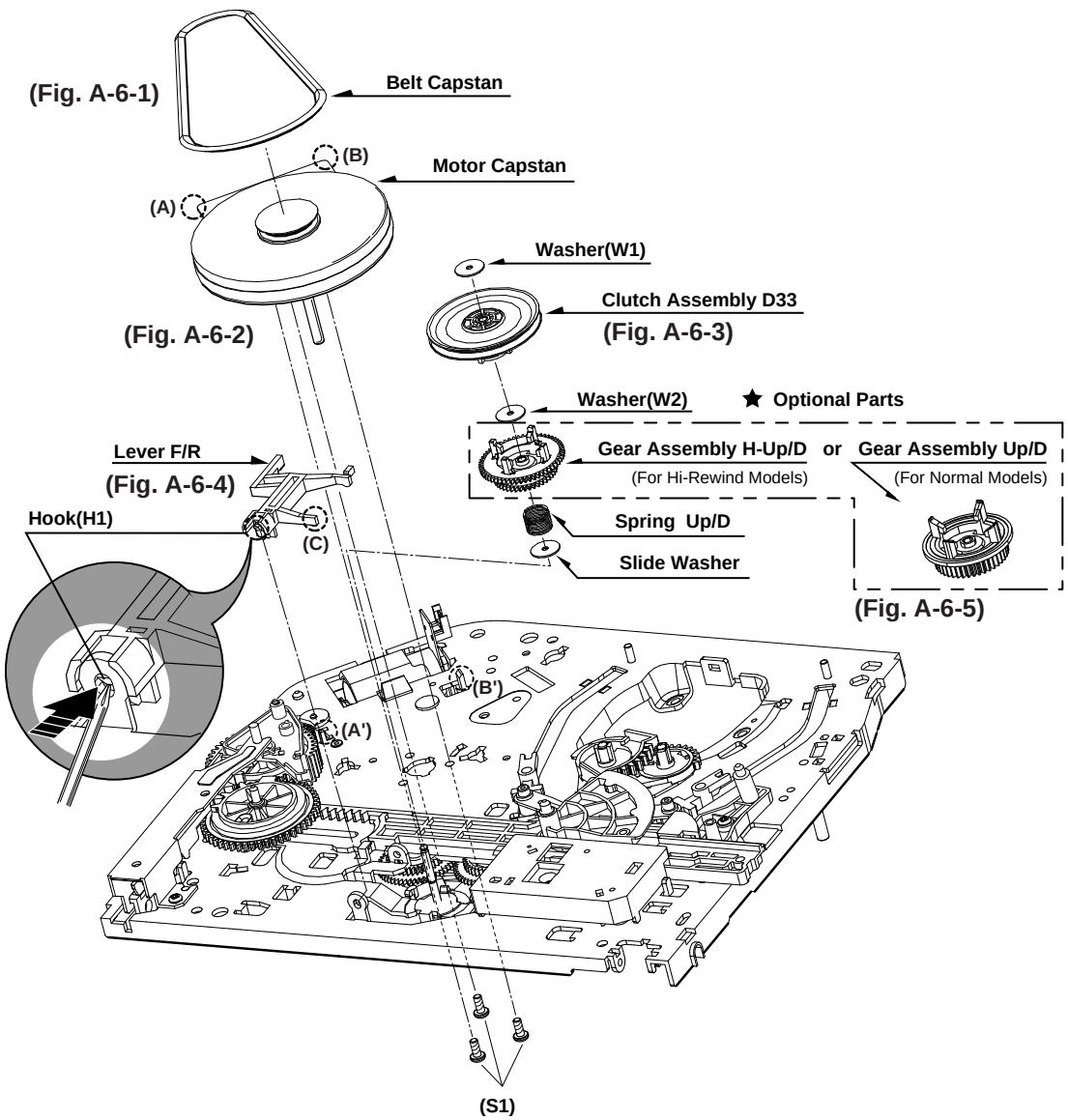


Fig. A-6

20. Belt Capstan (Fig. A-6-1)/ Motor Capstan (Fig. A-6-2)

1) Remove the Belt Capstan.
2) Remove three Screws(S1) on the back side of the Chassis and lift up the Motor Capstan.

NOTE

(1) When reassembling, Confirm the (A), (B) parts of Motor Capstan is located to the (A'), (B') of the Chassis.

21. Clutch Assembly D33 (Fig. A-6-3)

1) Remove the Washer(W1) and lift up the Clutch Assembly D33.

22. Lever F/R (Fig. A-6-4)

1) Unhook the (H1) shown above Fig. A-6-4 and lift up the Lever F/R.

NOTE

(1) When reassembling, move the (C) part of the Lever F/R up and down, then confirm if it is returned to original position.

23. Gear Assembly H-Up/D or Gear Assembly Up/D (Fig. A-6-5)

1) Remove the Washer(W2) and lift up the Gear Assembly H-up/D.
2) Remove the Spring Up/D.
3) Remove the Slide Washer.

NOTE

(1) Gear Assembly H-Up/D is for Hi-Rewind Models.
(2) Gear Assembly Up/D is for Normal Models except Hi-Rewind Models.

DECK MECHANISM DISASSEMBLY

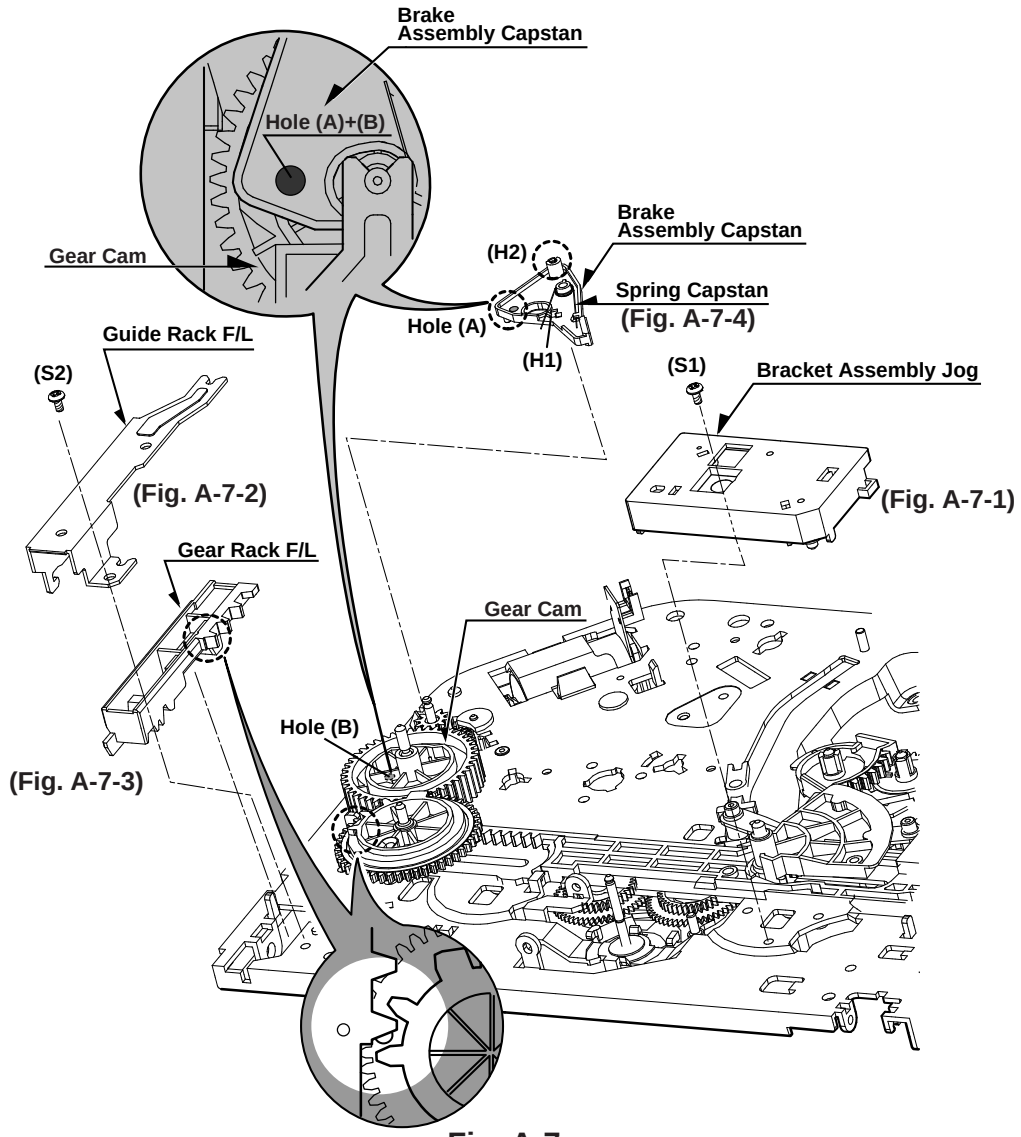


Fig. A-7

24. Bracket Assembly Jog (Fig. A-7-1)

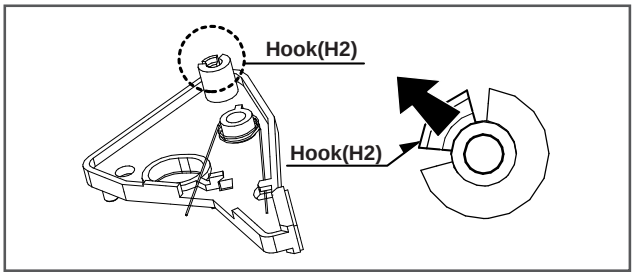
1) Remove the Screw(S1) and lift up the Bracket Assembly Jog.

25. Guide Rack F/L (Fig. A-7-2)/ Gear Rack F/L (Fig. A-7-3)

1) Remove the Screw(S2) and lift up the Guide Rack F/L.
2) Lift up the Gear Rack F/L.

26. Brake Assembly Capstan (Fig. A-7-4)

1) Hook the Spring Capstan on the Hook(H1).
2) Unhook the Hook(H2) and lift up the Brake Assembly Capstan.(Refer to Fig. to the right)



NOTE

(1) When reassembling, confirm that the Hole(A) of the Brake Assembly Capstan is aligned to the Hole(B) of the Gear Cam.
(Refer to above Fig. A-7-4).

DECK MECHANISM DISASSEMBLY

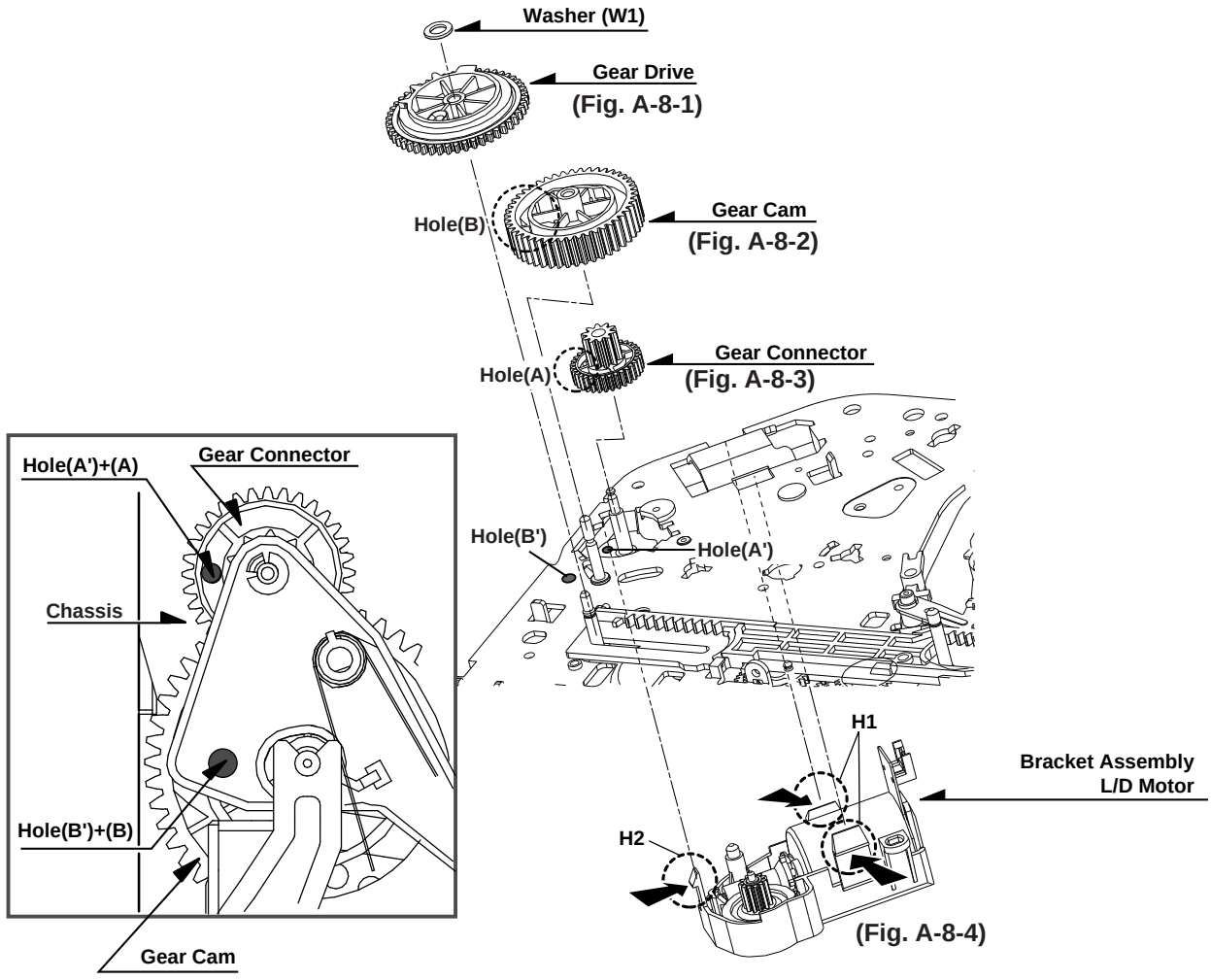


Fig. A-8

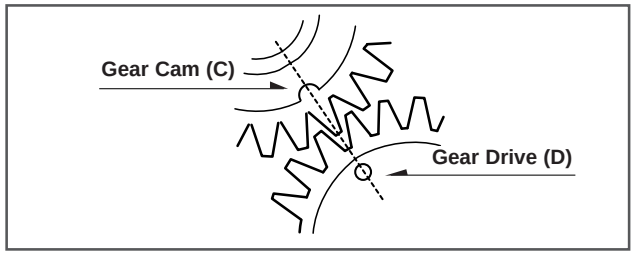
27. Gear Drive (Fig. A-8-1)/ Gear Cam (Fig. A-8-2)/ Gear Connector (Fig. A-8-3)

1) Remove the Washer(W1) and lift up the Gear Drive.
2) Lift up the Gear Cam.
3) Lift up the Gear Connector.

NOTE

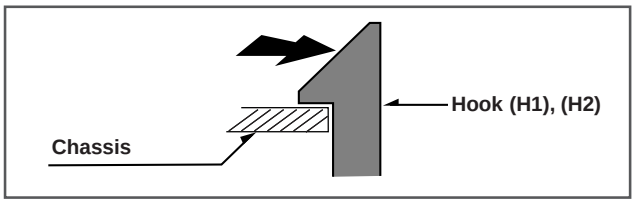
(1) When reassembling, confirm that the Hole (A) of the Gear Connector is aligned to the Hole (A') of the Chassis (Fig. A-8-3).
(2) When reassembling, confirm that the Hole (B) of the Gear Cam is aligned to the Hole (B') of the Chassis (Fig. A-8-2).
(3) When reassembling, confirm that the (C) part of the Gear Cam is aligned to the (D) part of the Gear Drive as shown Fig. B-3

(Fig. B-3)



28. Bracket Assembly L/D Motor (Fig. A-8-4)

1) Unhook the three Hooks(H1),(H2) and push down the Bracket Assembly L/D Motor.



DECK MECHANISM DISASSEMBLY

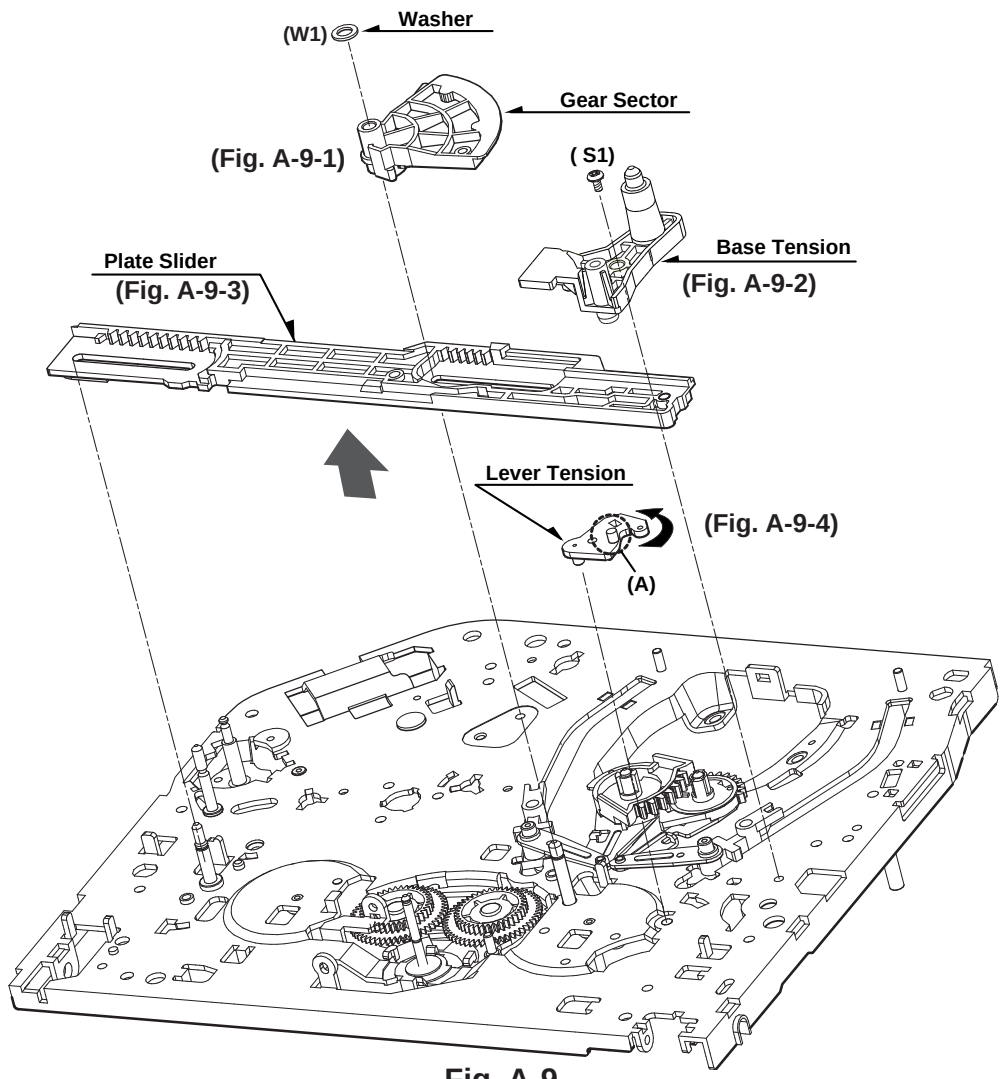


Fig. A-9

29. Gear Sector (Fig. A-9-1)

1) Remove the Washer(W1) and lift up the Gear Sector.

30. Base Tension (Fig. A-9-2)/ Plate Slider (Fig. A-9-3)/ Lever Tension (Fig. A-9-4)

1) Remove the Screw(S1) and lift up the Base Tension.
2) Lift up the Plate Slider.
3) Hold the (A) Part of the Lever Tension and turn to the counterclockwise direction, and then lift up the Lever Tension.

NOTE

(1) When reassembling, turn the Lever Tension to the clockwise direction in maximum.

DECK MECHANISM DISASSEMBLY

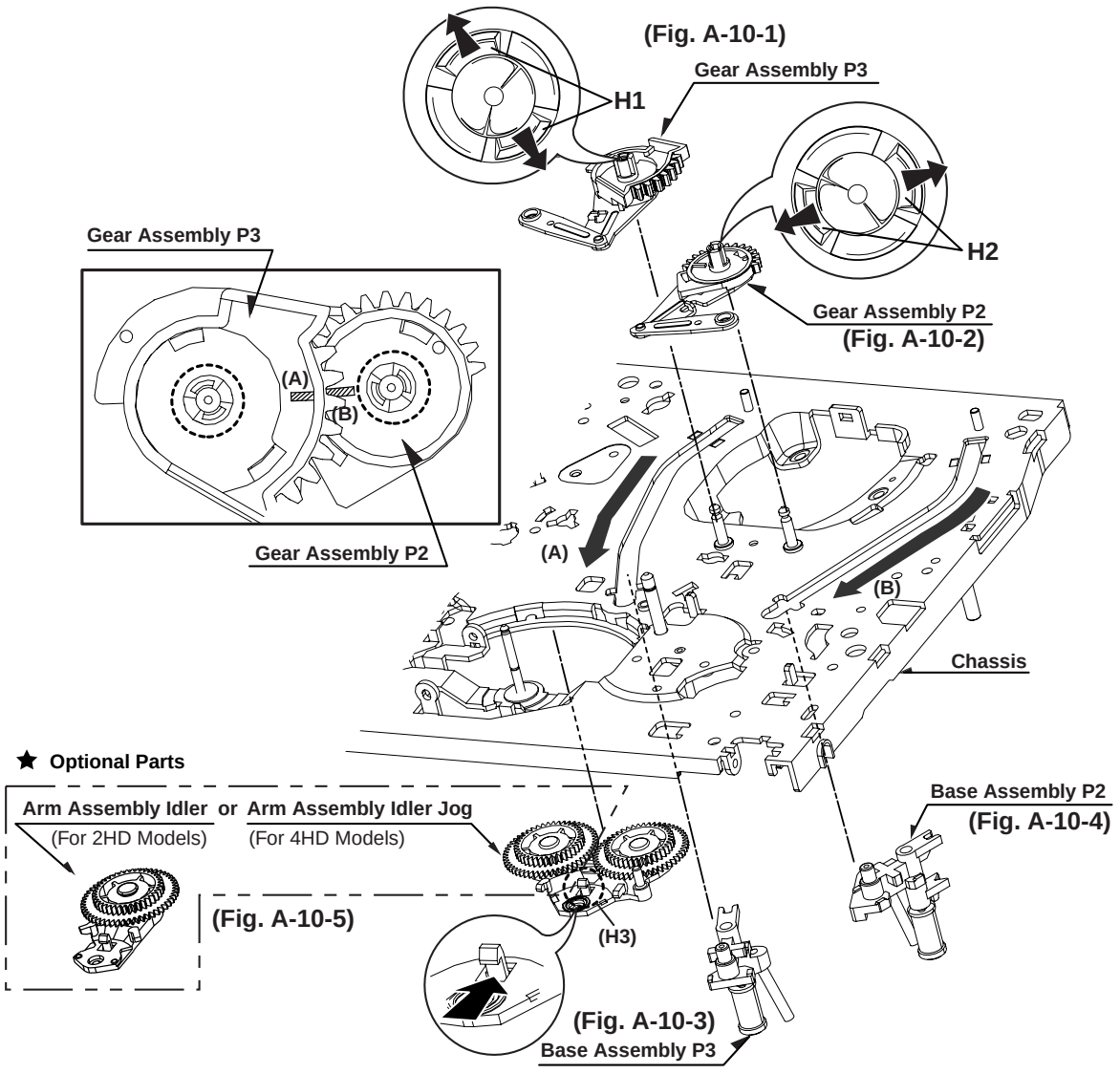


Fig. A-10

31. Gear Assembly P3 (Fig. A-10-1)/ Gear Assembly P2 (Fig. A-10-2)

1) Unhook the two Hooks(H1) and lift up the Gear Assembly P3.
2) Unhook the two Hooks(H2) and lift up the Gear Assembly P2.

32. Base Assembly P3 (Fig. A-10-3)/ Base Assembly P2 (Fig. A-10-4)

1) Move the Base Assembly P3 in the direction of the arrow of the Chassis Hole(A) and push down the Base Assembly P3.
2) Move the Base Assembly P2 in the direction of the arrow of the Chassis Hole(B) and push down the Base Assembly P2.

33. Arm Assembly Idler Jog or Arm Assembly Idler (Fig. A-10-5)

1) Unhook the Hook(H3) and push down the Arm Assembly Idler Jog.

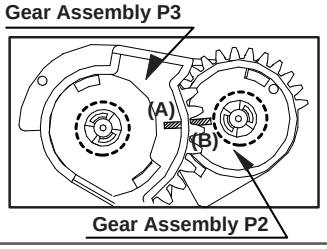
NOTE

1) Arm Assembly Idler Jog is for 4HD Models.
2) Arm Assembly Idler is for 2HD Models.

NOTE

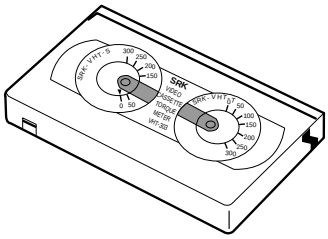
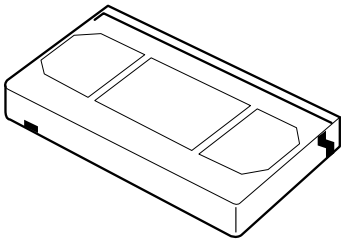
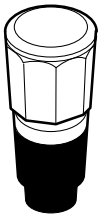
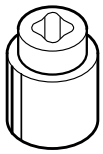
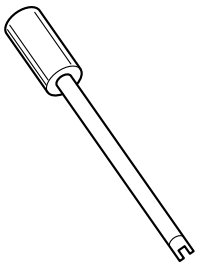
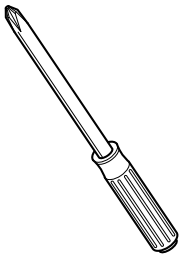
1) When reassembling, confirm that the (A) Part of the Gear Assembly P3 is aligned to the (B) Part of the Gear Assembly P2 as shown below.

(Unloading Condition)



DECK MECHANISM ADJUSTMENT

• Tools and Fixfures for Service

1. Cassette Torque meter SRK-VHT-303(Not SVC part) Parts No: D00-D006 	2. Alignment tape Parts No NTSC: DTN-001 PAL:DTN-0002 	3. Torque gauge 600g.Cm ATG Parts No:D00-D002 
4. Torque gauge adaptor Parts No:D09-R001 	5. Post height adjusting driver Parts No:DTL-0005 	6. + Type driver (ø 5) 

DECK MECHANISM ADJUSTMENT

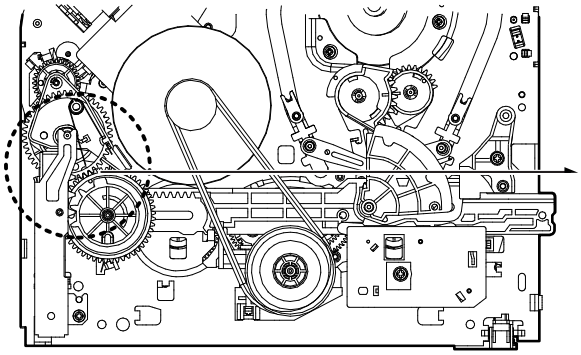
1.Mechanism Alignment Position Check

Purpose:To determine if the Mechanism is in the correct position, when a Tape is ejected.

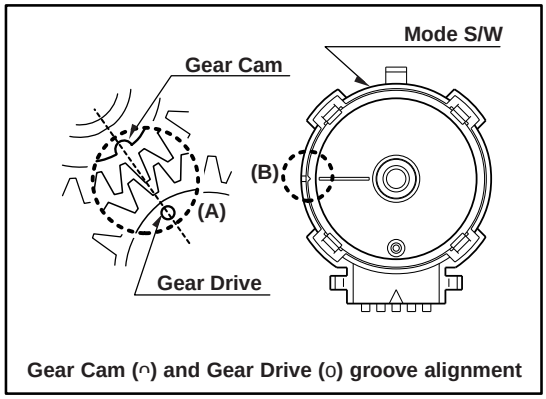
Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position

1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button.
2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam Hole is aligned with the Chassis Hole as below Fig. C-2.
3) IF not, rotate the Shaft of the Loading Motor to either Clockwise or Counterclockwise until the Alignment is as below Fig. C-2.
4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with the Gear Drive as below Fig. C-1(A).
5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B).
6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

CHECK DIAGRAM

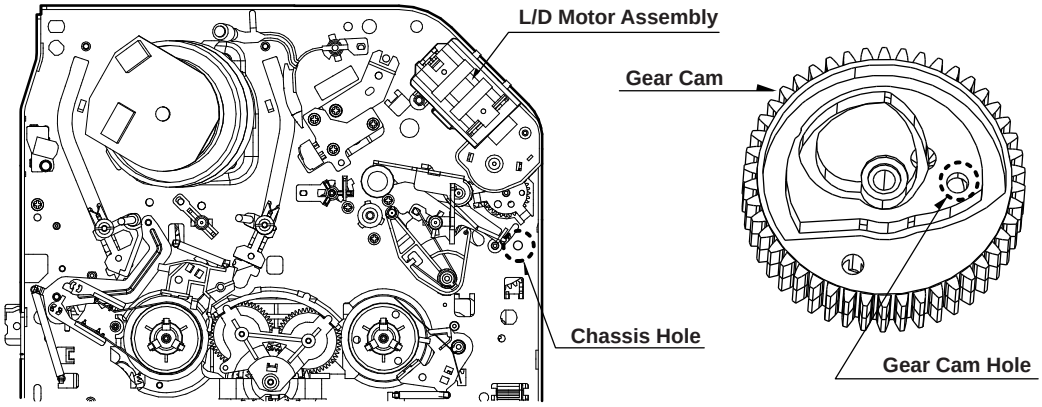


BOTTOM VIEW



Gear Cam (∩) and Gear Drive (o) groove alignment

Fig. C-1



TOP VIEW

Fig. C-2

DECK MECHANISM ADJUSTMENT

2. Preparation for Adjustment (To set the Deck Mechanism to the Loading state without inserting a Cassette Tape).

1) Unplug the Power Cord from the AC Outlet.
2) Disassemble the Top Cover and Plate Assembly Top.
3) Plug the Power Cord into the AC Outlet.
4) Turn the Power S/W on and push the Lever Stopper (L),(R) of the Holder Assembly CST to the back for Loading the Cassette without Tape.
Cover the Holes of the End Sensors at the both sides of the Bracket Side(L) and Bracket Assembly Door to prevent a light leak.
Then The Deck Mechanism drives to the Stop Mode.
In this case, The Deck Mechanism can accept inputs of each mode, however the Rewind and Review Operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

3. Checking Torque

Purpose: To insure smooth Transport of the Tape during each Mode of Operation. If the Tape Transport is abnormal, then check the Torque as indicated by the chart below.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Checking Method
• Torque Gauge(600g/cm ATG) • Torque Gauge Adaptor • Cassette Torque Meter SRK-VHT-303	• Play (FF) or Review (REW) Mode	• Perform each Deck Mechanism Mode without inserting a Cassette Tape(Refer to above No.2 Preparation for Adjustment). • Read the Measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2). • Attach the Torque Gauge Adaptor to the Torque Gauge and then read the Value of it(Fig. C-3-1).

Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	75~115g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	130~200g/m

NOTE:

The Values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

• Cassette Torque Meter (SRK-VHT-303)

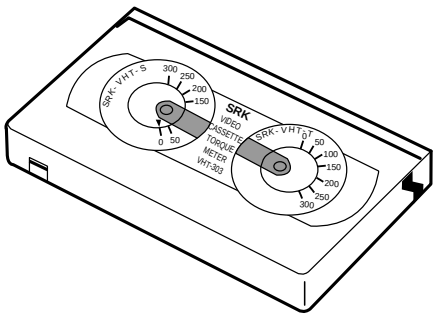


Fig. C-3-2

NOTE:

The Torque reading to measure occurs when the Tape abruptly changes direction from Fast Forward of Rewind Mode, when quick bracking is applied to both Reels.

• Torque Gauge (600g.cm ATG)

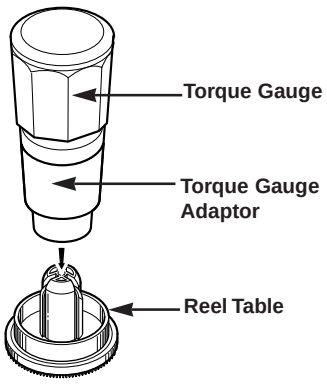


Fig. C-3-1

DECK MECHANISM ADJUSTMENT

4.Guide Roller Height Adjustment

Purpose: To regulate the Height of the Tape so that the Bottom of the Tape runs along the Tape Guide Line on the Lower Drum.

4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Post Height Adjusting Driver	• Play or Review Mode	• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure

1) Confirm if the Tape runs along the Tape Guide Line of the Lower Drum.
2) If the Tape runs the Bottom of the Guide Line, turn the Guide Roller Height Adjustment Screw to Clockwise direction.
3) If it runs the Top, turn to Counterclockwise direction.
4) Adjust the Height of the Guide Roller to be guided to the Guide Line of the Lower Drum from the Starting and Ending Point of the Drum.

ADJUSTMENT DIAGRAM

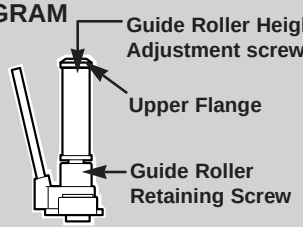


Fig. C-4-1

4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
• Oscilloscope • Alignment Tape • Post Height Adjusting Driver	• CH-1:PB RF Envelope • CH-2:NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Point • RF Envelope Output Point	• Play an Alignment Tape	• Guide Roller Height Adjustment Screws

Adjustment Procedure

1) Play an Alignment Tape after connecting the Probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point.
2) Tracking Control(in PB Mode) : Center Position(When this Adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum).
3) Height Adjustment Screw : Flatten the RF Waveform. (Fig. C-4-2)
4) Turn(Move) the Tracking Control(in PB Mode) Clockwise and Counterclockwise.(Fig. C-4-3)
5) Check that any Drop of RF Output is uniform at the Start and End of the Waveform.

NOTE

If the adjustment is excessive or insufficient the tape will jam or fold.

Waveform Diagrams

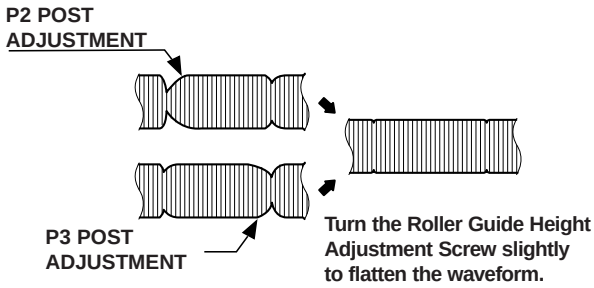


Fig. C-4-2

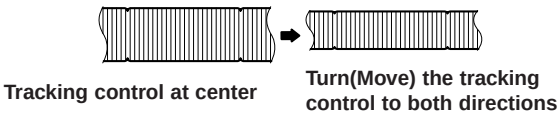
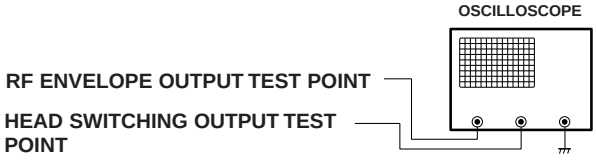


Fig. C-4-3

Connection Diagram



DECK MECHANISM ADJUSTMENT

5. Audio/Control (A/C) Head Adjustment

Purpose: To insure that the Tape passes accurately over the Audio and Control Tracks in exact Alignment in both the Record and Playback Modes.

5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

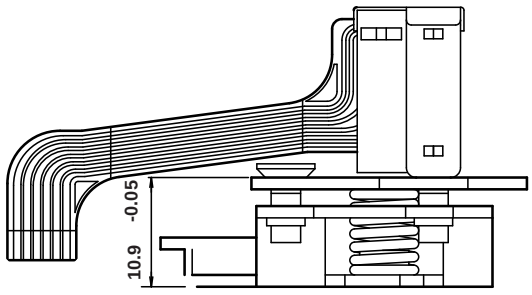
Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Blank Tape • Screw Driver(+) Type 5mm	• Play the blank tape	• Tilt Adjustment Screw(C) • Height Adjustment Screw(B) • Azimuth Adjustment Screw(A)

Adjustment Procedure/Diagrams

1) Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
2) Play a Blank Tape and observe if the Tape passes accurately over the A/C Head without Tape Curling or Folding.
3) If Folding or Curling is occured then adjust the Tilt Adjustment Screw(C) while the Tape is running to resemble Fig. C-5-3.
4) Reconfirm the Tape Path after Playback about 4~5 seconds.

NOTE

Ideal A/C head height occurs, when the tape runs between 0.2~0.25mm above the bottom edge of the A/C head core.



A/C Head Base

Fig. C-5-1

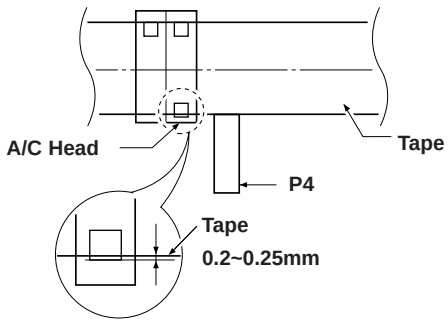
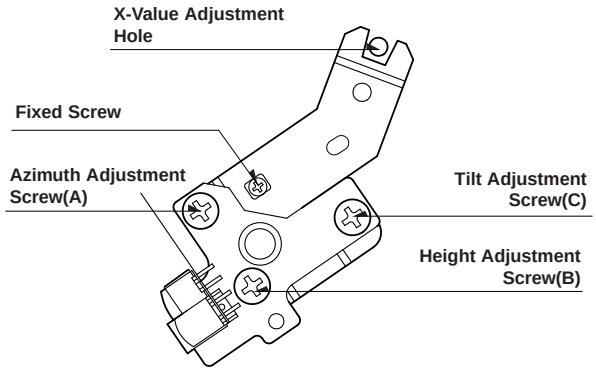


Fig. C-5-3



A/C Head Assembly

Fig. C-5-2

5-2. Confirm that the Tape passes smoothly between the Take-up Guide and Pinch Roller(using a Mirror or the naked eye).

1) Afetr completing Step 5-1.(Preliminary Adjustment), check that the Tape passes around the Take-up Guide and Pinch Roller without Folding or Curling at the Top or Bottom.
   (1) If Folding or Curling is observed at the Bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the Clockwise directioin.
   (2) If Folding or Curling is observed at the Top of it then slowly turn the Tilt Adjustment Screw(C) in the Counterclockwise direction.

NOTE:

Check the RF Envelope after adjusting the A/C Head, if the RF Waveform differs from Fig. C-5-4, performs Precise Adjustment to flat the RF Waveform.

5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
• Oscilloscope • Alignment Tape(SP) • Screw Driver(+) Type 5mm	• Audio output jack	• Play an Alignment Tape 1KHz, 7KHz Sections	• Azimuth Adjustment Screw(A) • Height Adjustment Screw(B)

Adjustment Procedure

1) Connect the Probe of the Oscilloscope to Audio Output Jack.
2) Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for Maximum Output of the 1Khz and 7Khz segments, while maintaining the flattest Envelope differential between the two Frequencies.

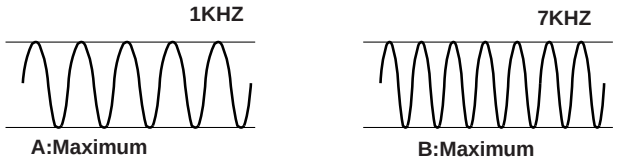
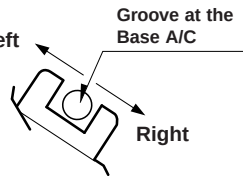


Fig. C-5-4

6. X-Value Adjustment

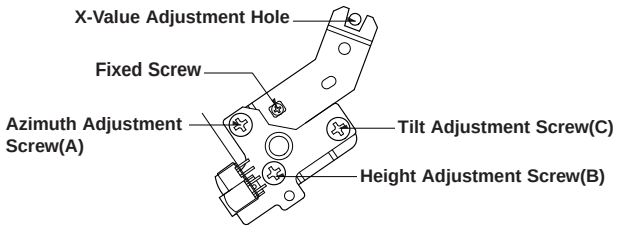
Purpose: To obtain compatibility with other VCR(VCP) Models.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
• Oscilloscope • Alignment tape(SP only) • Screw Driver(+) Type 5mm	• CH-1: PB RF Envelope • CH-2: NTSC: SW 30Hz PAL: SW 25Hz • Head Swithching Output Test Point • RF Envelope Output Test Point	• Play an Alignment Tape	

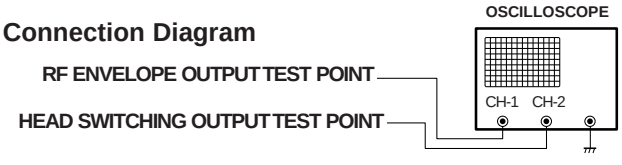
Adjustment Procedure

1) Release the Automatic Tracking to run long enough for Tracking to complete it's Cycle.
2) Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the Diagram to find the center of the peak that allows for the maximum Waveform Envelope.
   This method should allow the 31um Head to be centrally located over the 58um Tape Track.
3) Tighten the Base Assembly A/C Head mounting Screw.

Adjustment Diagram



Connection Diagram



DECK MECHANISM ADJUSTMENT

7. Adjustment after Replacing Drum Assembly (Video Heads)

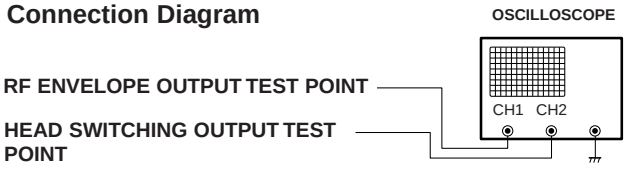
Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
• Oscilloscope • Alignment tapes • Blank Tape • Post Height Adjusting Driver • Screw Driver(+) Type 5mm	• CH-1: PB RF Envelope • CH-2: NTSC: SW 30Hz PAL: SW 25Hz • Head Swithching Output Test Point • RF Envelope Output Test Point	• Play the blank tape • Play an alignment tape	• Guide Roller Precise Adjustment • Switching Point • Tracking Preset • X-Value

Checking/Adjustment Procedure

Play a blank tape and check for tape curling or creasing around the roller guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".

Connection Diagram



Waveform

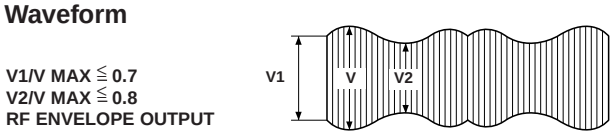


Fig. C-7

8. Check the Tape Travel after Reassembling Deck Assembly.

8-1.Check Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mecanism Condition)
• Oscilloscope • Alignment tapes(with 6H 3kHz Color Bar Signal) • Stop Watch	• RF Locking Time: Less than 5 sec. • Audio Locking Time:Less than 10sec	• CH-1: PB RF Envelope • CH-2: Audio Output • RF Envelope Output Point • Audio Ouptut Jack	• Play an alignment tape (with 6H 3kHz Color Bar Signal)

Checking Procedure

Play an alignment tape then change the operating mode to CUE or REV and confirm if the unit meets the above listed specifications.

NOTES:

1) CUE is fast forward mode (FF)
2) REV is the rewind mode (REW)
3) Referenced to the Play mode

8-2.Check for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mecanism Condition)
• T-160 Tape • T-120 Tape	• Be sure there is no tape jamming or curling at the begining, middle or end of the tape.	• Run the CUE, REV play mode at the beginning and the end of the tape.

Checking Procedure

1) Confirm that the tape runs smoothly around the roller guides, drum and A/C head assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the begining, middle and end sections of the cassette.
2) Confirm that the tape passes over the A/C head assembly as indicated by proper audio reproduction and proper tape counter performance.

MAINTENANCE/INSPECTION PROCEDURE

1 Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.
Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replacement	
Color beats	Dirt on full-erase head	o	F/E Head
Poor S/N, no color	Dirt on video head	o	Video Head
Vertical or Horizontal jitter	Dirt on video head Dirt on tape transport system	o	
Low volume, Sound distorted	Dirt on Audio/control head	o	A/C Head
Tape does not run. Tape is slack	Dirt on pinch roller	o	Pinch Roller Belt Capston
In Review and Unloading (off mode), the Tape is rolled up loosely.	Clutch Ass'y S27 Torque reduced	o	Clutch Assembly D33
	Cleaning Drum and transport system	Fig. C-9-3	

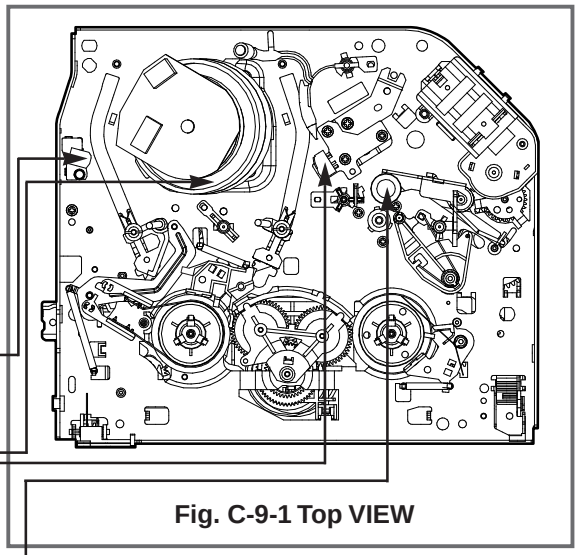


Fig. C-9-1 Top VIEW

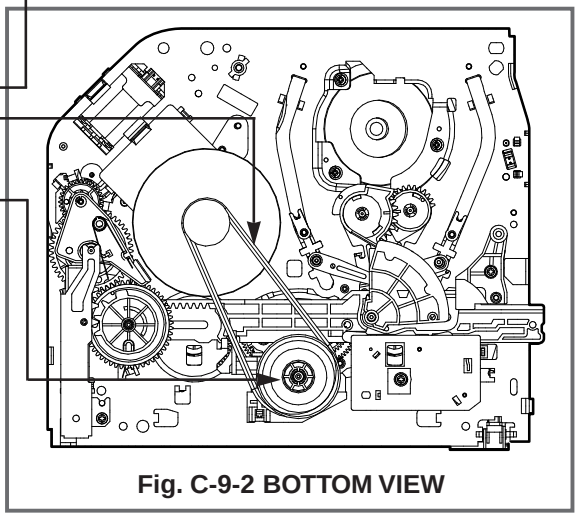


Fig. C-9-2 BOTTOM VIEW

NOTE

If locations marked with **o** do not operate normally after cleaning, check for wear and replace.
See the EXPLODED VIEWS at the end of this manual as well as the above illustrations See the Greasing (Page 4-22) for the sections to be lubricated and greased.

*** No. (1)~(13) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.**

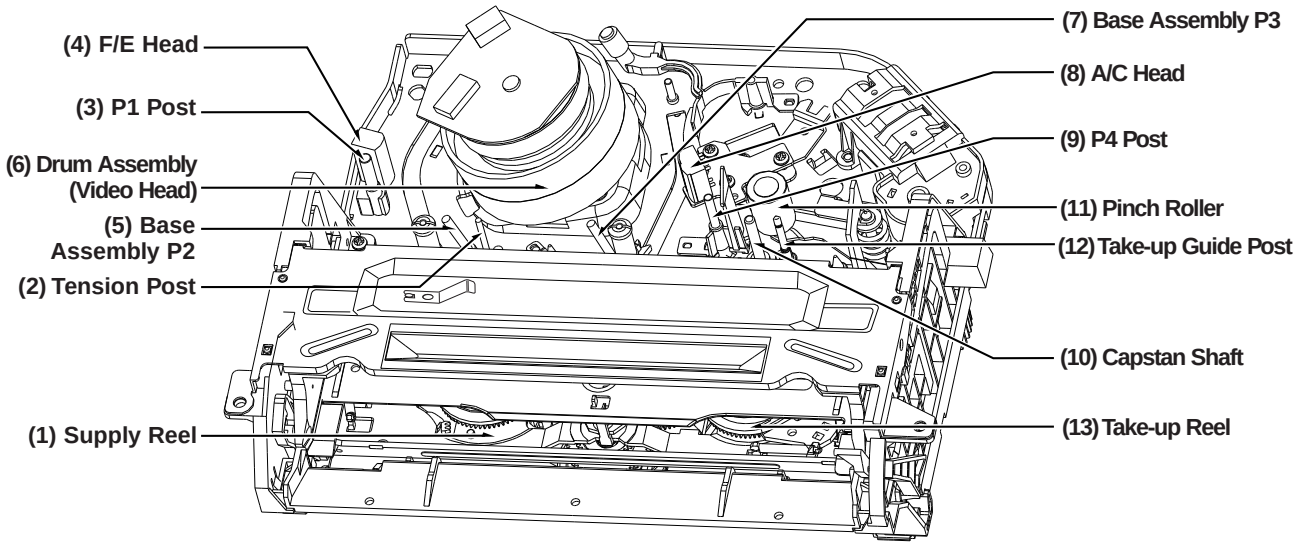


Fig. C-9-3 Tape Transport System

2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatiblity with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.
But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary / Average hours used per day	About 1 year	About 18 months	About 3 years
One hour	■	■	■
Two hours	■	■	
Three hours	■		

4. Supplies Required for Inspection and Maintence

(1) Grease : Kanto G-311G (Blue) or equivalent
(2) Isopropyl Alcohol or equivalent
(3) Cleaning Patches
(4) Grease : Kanto G-381(Yellow) : Used only for Reel S and Reel T

5) Maintenance Procedure

5-1) Cleaning

(1) Cleaning video head
First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.
(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)
Thoroughly dry the head. Then run the test tape. If Isopropyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.
(2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isporopyl Alcohol.

NOTES:

① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no that force is that would cause deforming or damage applied to the system.

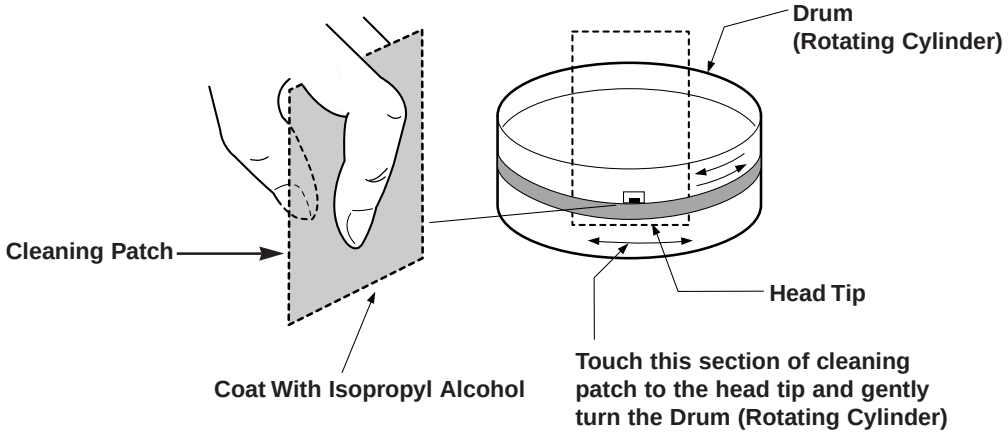

Drum
(Rotating Cylinder)
Cleaning Patch
Head Tip
Coat With Isopropyl Alcohol
Touch this section of cleaning patch to the head tip and gently turn the Drum (Rotating Cylinder)

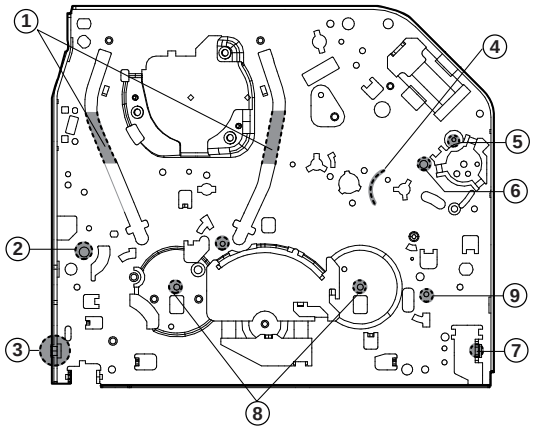
Fig. C-9-4

5-2) Greasing

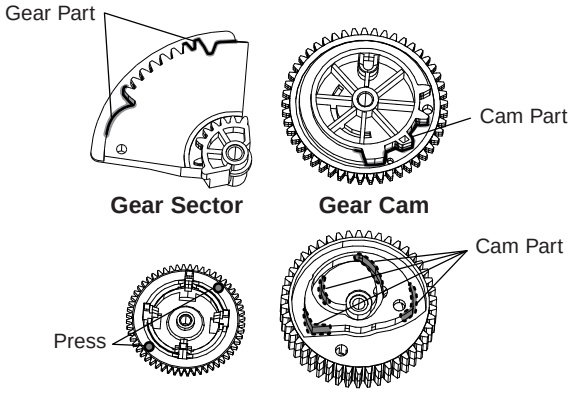
(1) Greasing guidelines
Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with clean ing patch wetted in Isopropyl Alcohol.

NOTE:Greasing Points

1) Loading Path Inside & Top side
2) Base Tension Boss inside Hole
3) Arm Assembly F/L "U" Groove
4) Arm Take-up Rubbing Section
5) L/D Motor Worm Wheel Part
6) Shaft
7) Arm Assembly F/L of Buming Inside Hole
8) Reel S, T Shaft (G381:Yellow)
9) Brake T Groove

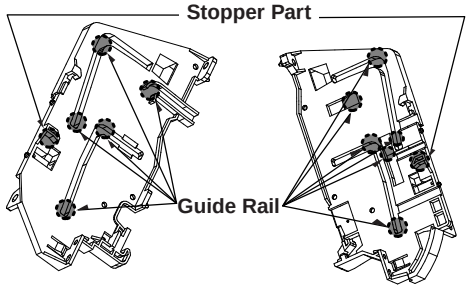


Chassis (Top)



Gear Sector **Gear Cam**

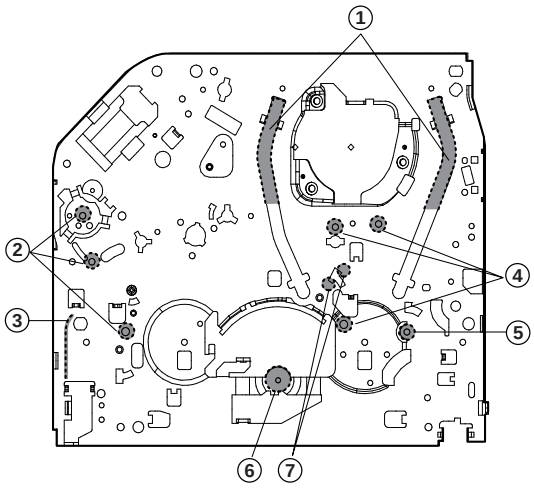
Gear Assembly Up/D **Gear Drive**



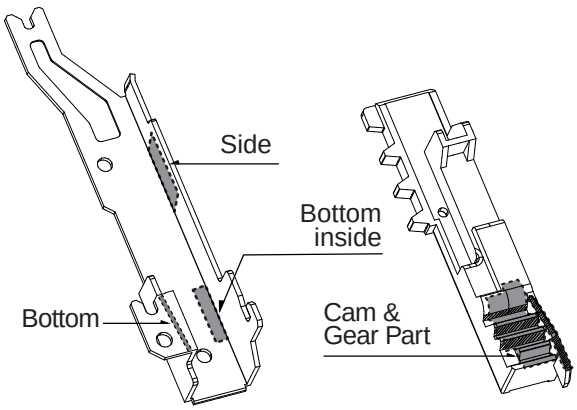
Bracket Side (L) **Bracket Assembly Door**

(2) Periodic greasing
Grease specified locations every 5,000 hours.

1) Loading Path Inside & Top side
2) Shaft
3) Gear Rack F/L Moving Section
4) Shaft
5) Lever Tension Groove
6) Clutch Assembly D33 Shaft
7) Brake "S" Rubbing Section



Chassis (Bottom)



Guide Rack F/L **Gear Rack F/L**

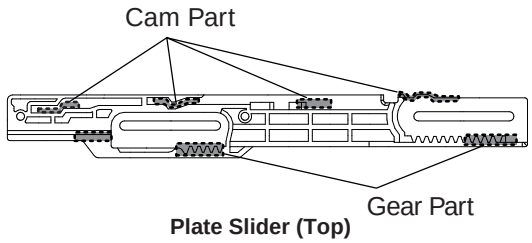


Plate Slider (Top)

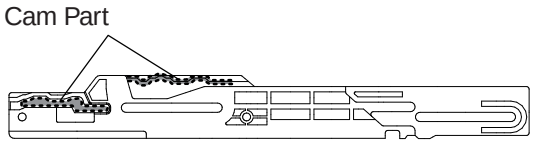
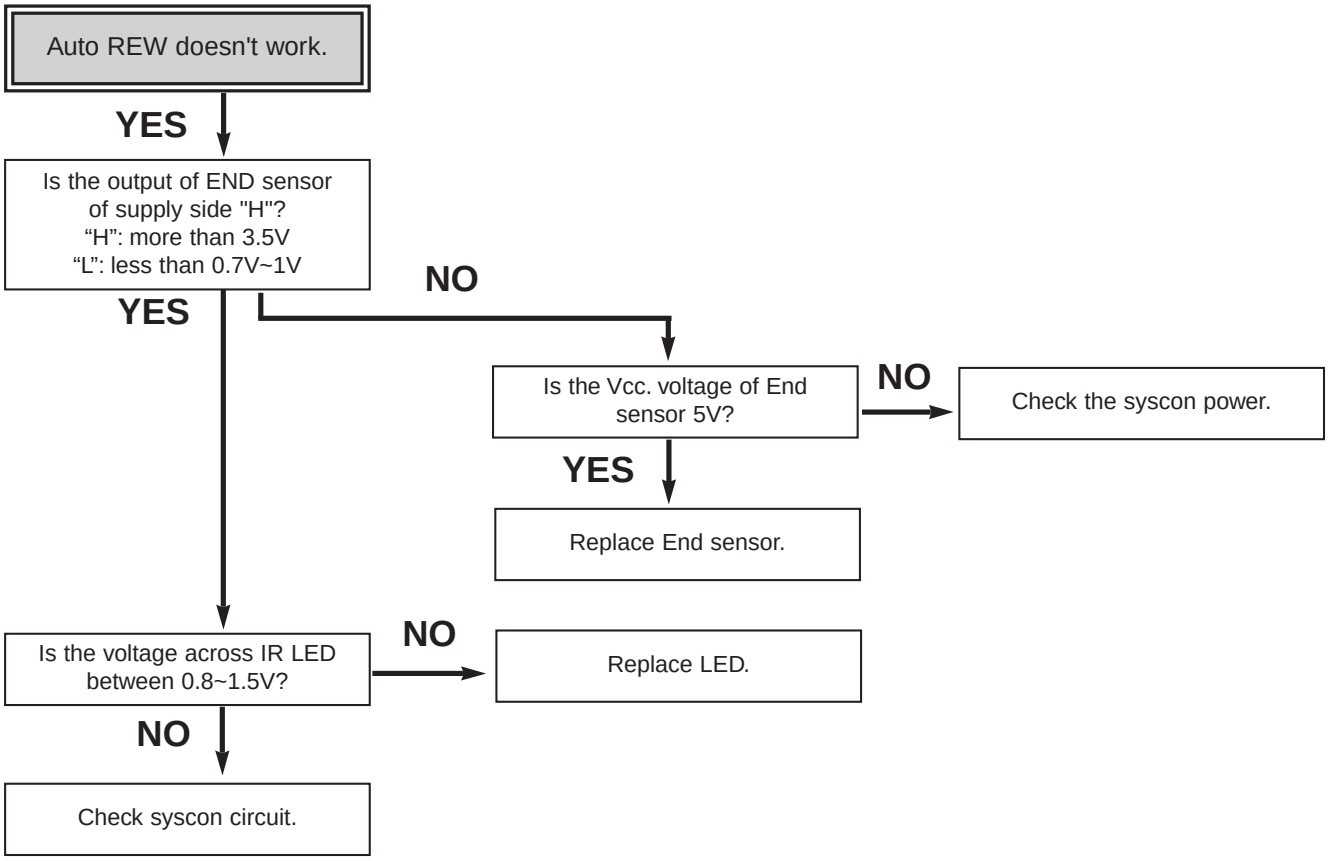


Plate Slider (Bottom)

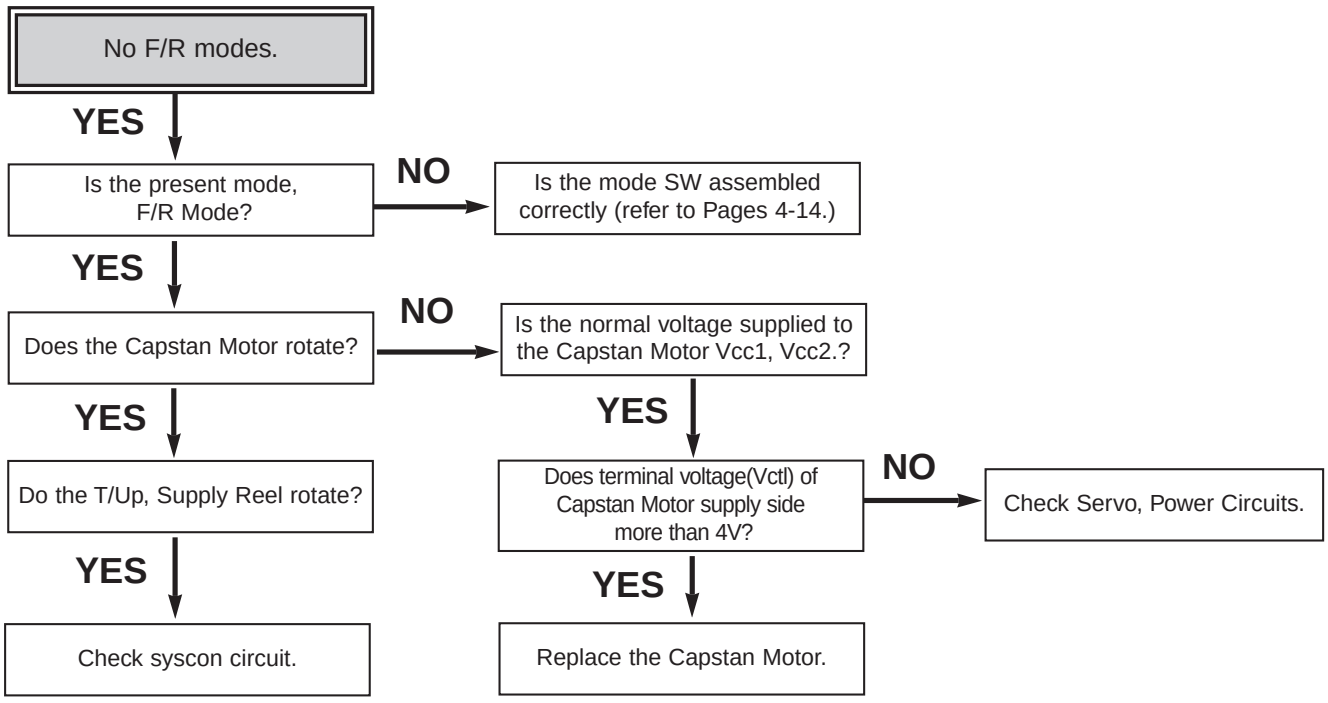
MECHANISM TROUBLESHOOTING GUIDE

1.Deck Mechanism

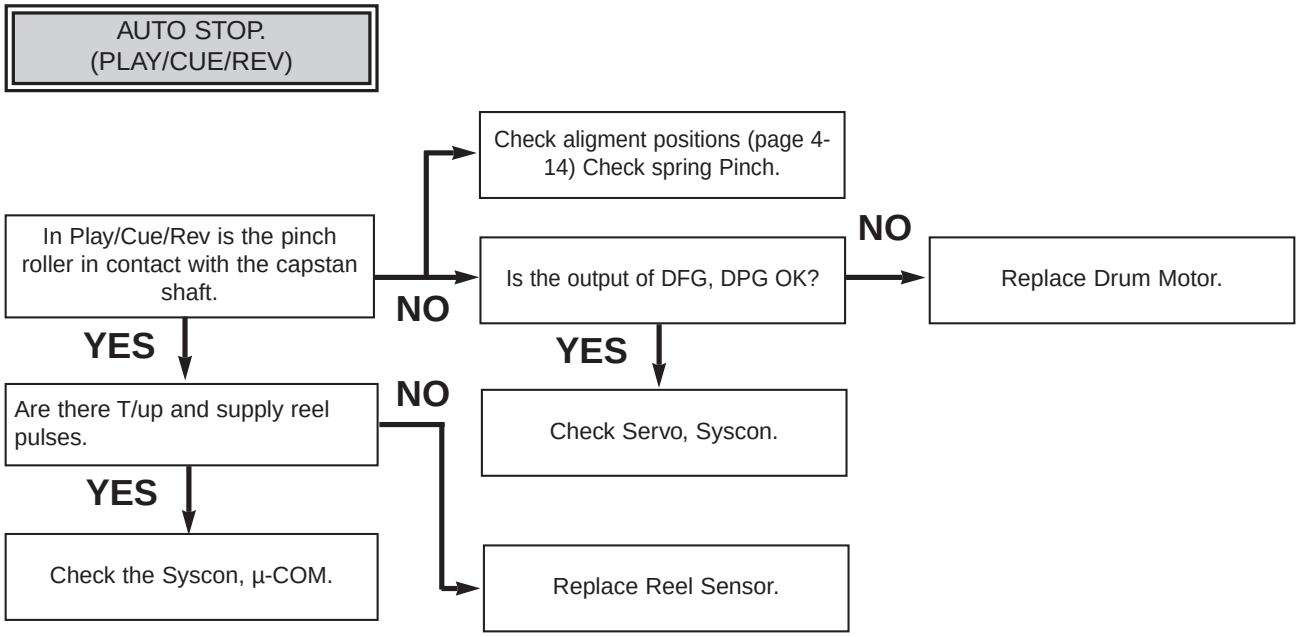
A.



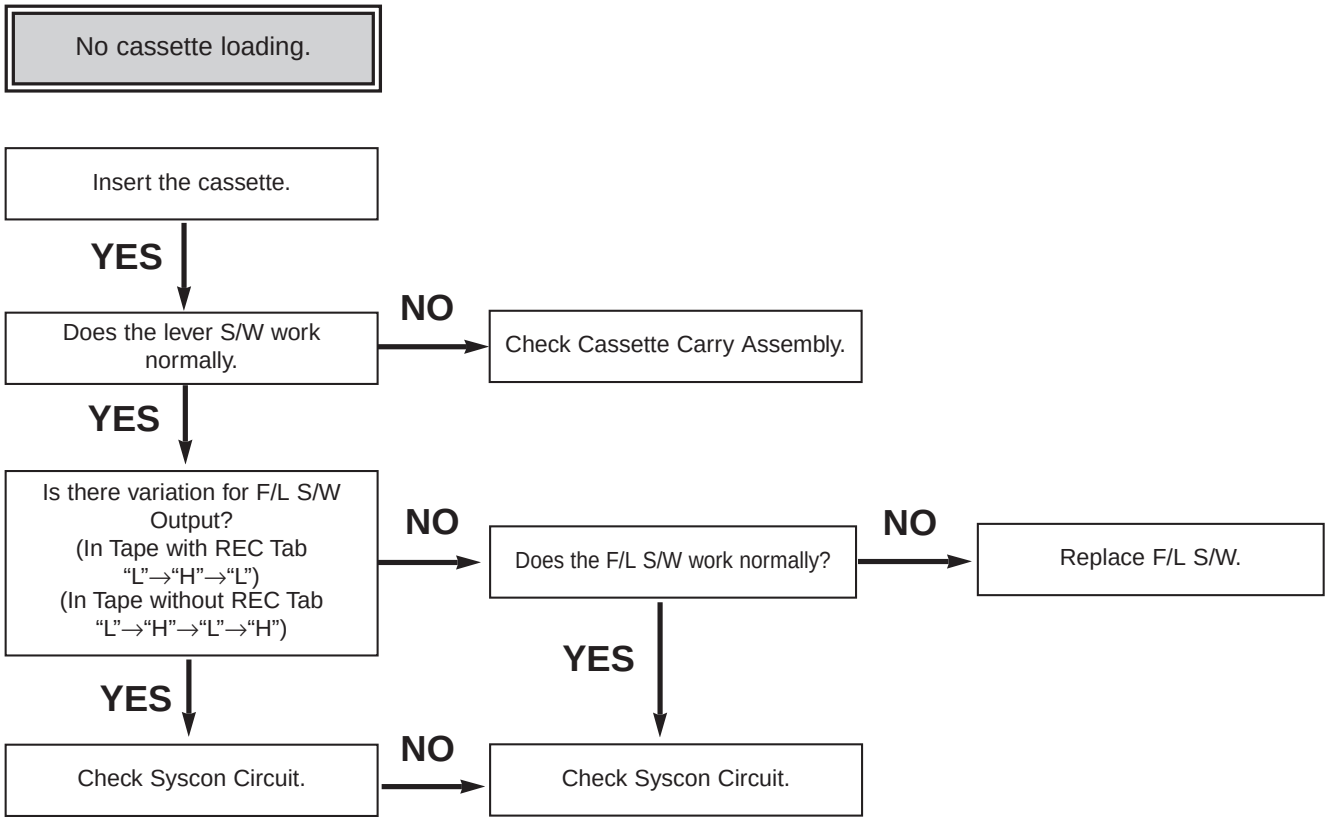
B.



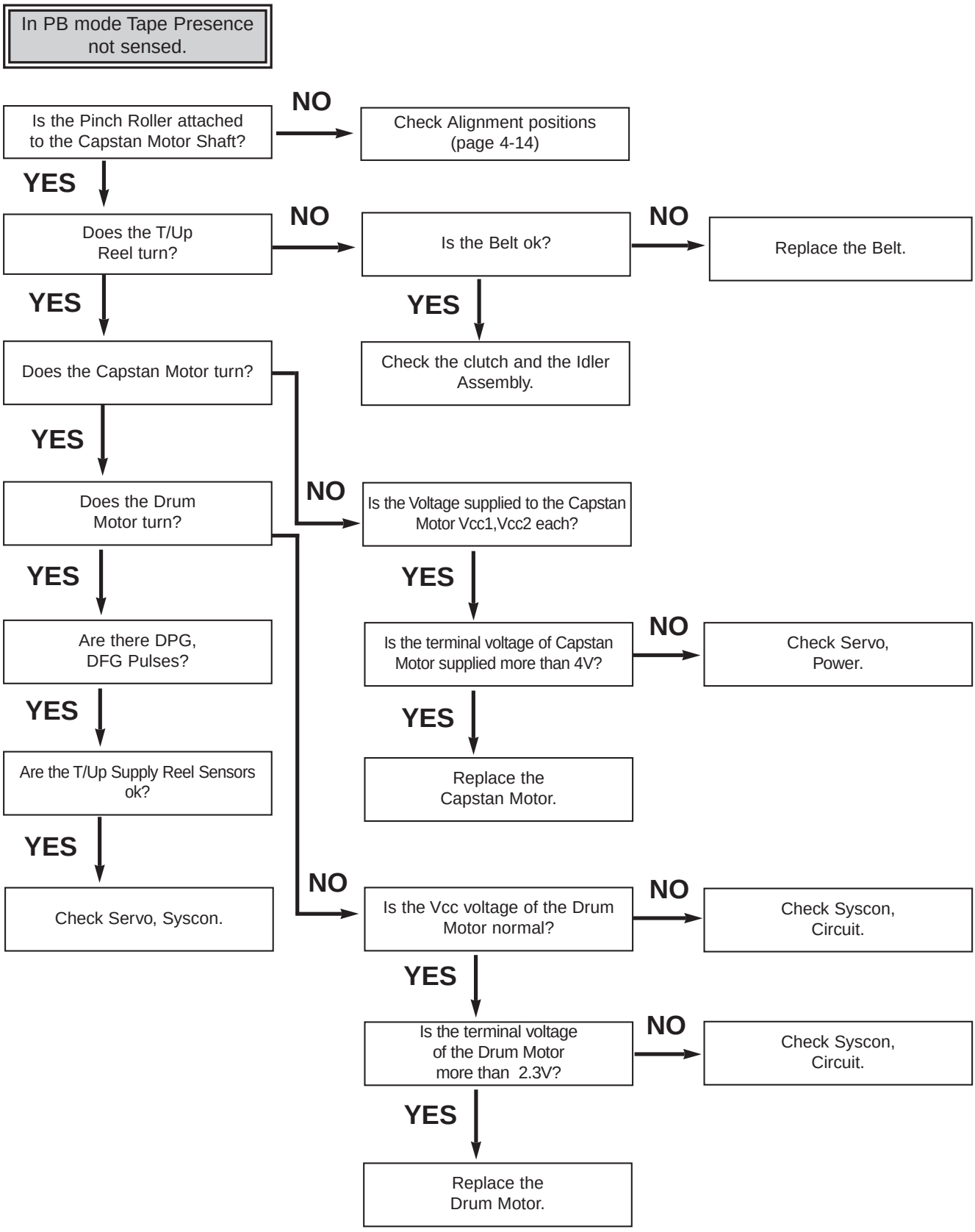
C.


AUTO STOP.
(PLAY/CUE/REV)
In Play/Cue/Rev is the pinch roller in contact with the capstan shaft.
Check aligment positions (page 4-14) Check spring Pinch.
NO
Is the output of DFG, DPG OK?
NO
Replace Drum Motor.
YES
YES
Are there T/up and supply reel pulses.
NO
Check Servo, Syscon.
YES
Check the Syscon, µ-COM.
Replace Reel Sensor.

D.


No cassette loading.
Insert the cassette.
YES
Does the lever S/W work normally.
NO
Check Cassette Carry Assembly.
YES
Is there variation for F/L S/W Output?
(In Tape with REC Tab
"L"→"H"→"L")
(In Tape without REC Tab
"L"→"H"→"L"→"H")
NO
Does the F/L S/W work normally?
NO
Replace F/L S/W.
YES
YES
Check Syscon Circuit.
NO
Check Syscon Circuit.

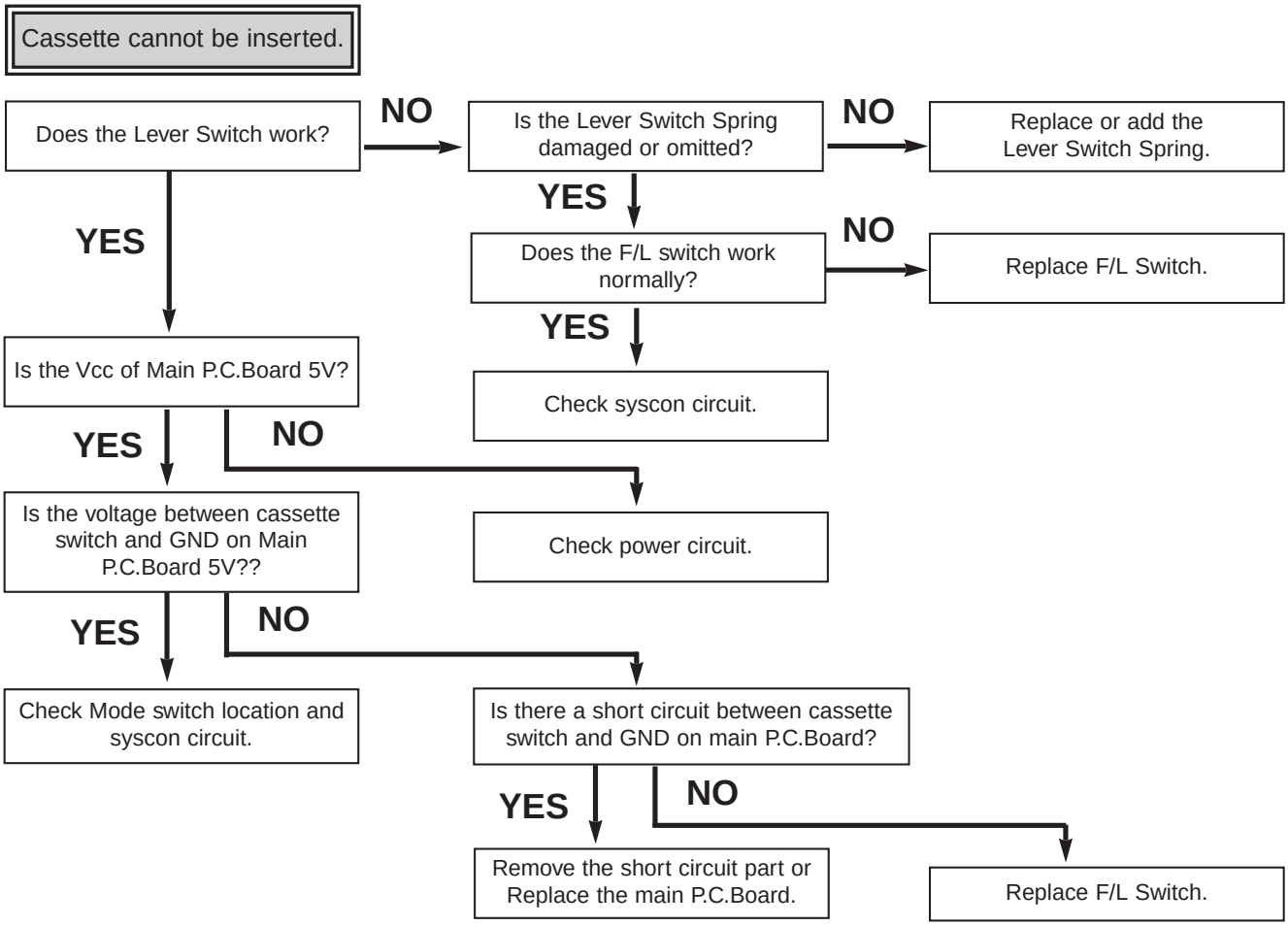
E.


In PB mode Tape Presence not sensed.
Is the Pinch Roller attached to the Capstan Motor Shaft?
NO
Check Alignment positions (page 4-14)
YES
Does the T/Up Reel turn?
NO
Is the Belt ok?
NO
Replace the Belt.
YES
YES
Check the clutch and the Idler Assembly.
Does the Capstan Motor turn?
YES
Does the Drum Motor turn?
NO
Is the Voltage supplied to the Capstan Motor Vcc1,Vcc2 each?
YES
YES
Are there DPG, DFG Pulses?
Is the terminal voltage of Capstan Motor supplied more than 4V?
NO
Check Servo, Power.
YES
YES
Are the T/Up Supply Reel Sensors ok?
Replace the Capstan Motor.
YES
NO
Check Servo, Syscon.
Is the Vcc voltage of the Drum Motor normal?
NO
Check Syscon, Circuit.
YES
Is the terminal voltage of the Drum Motor more than 2.3V?
NO
Check Syscon, Circuit.
YES
Replace the Drum Motor.

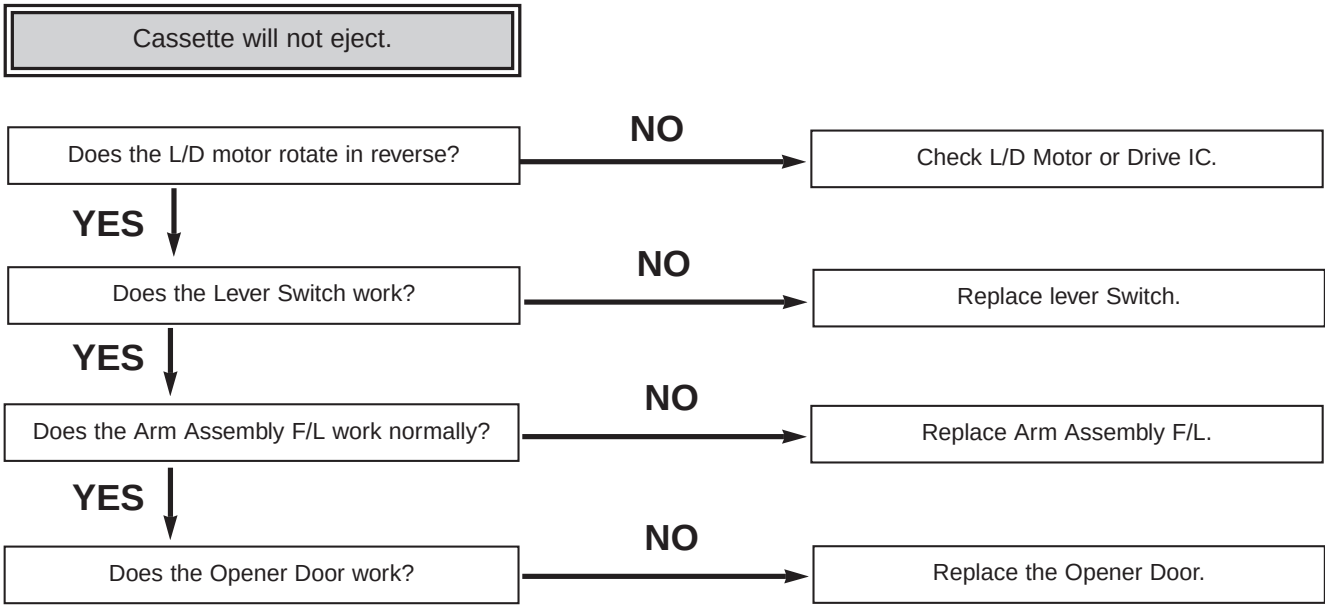
MECHANISM TROUBLESHOOTING GUIDE

2. Front Loading Mechanism

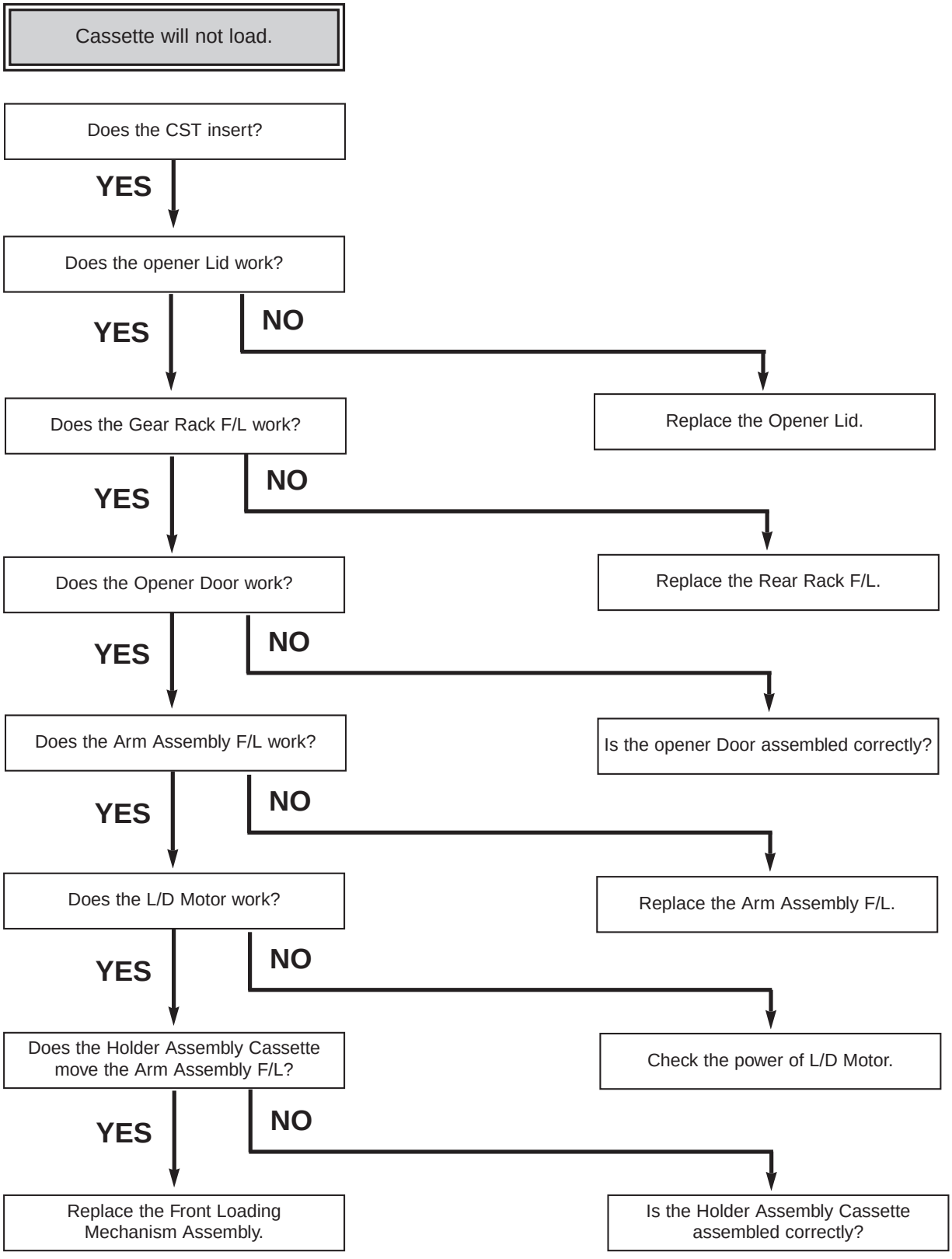
A.


Cassette cannot be inserted.
Does the Lever Switch work?
NO
Is the Lever Switch Spring damaged or omitted?
NO
Replace or add the Lever Switch Spring.
YES
YES
Does the F/L switch work normally?
NO
Replace F/L Switch.
YES
Is the Vcc of Main P.C.Board 5V?
Check syscon circuit.
YES
NO
Is the voltage between cassette switch and GND on Main P.C.Board 5V??
Check power circuit.
YES
NO
Check Mode switch location and syscon circuit.
Is there a short circuit between cassette switch and GND on main P.C.Board?
YES
NO
Remove the short circuit part or Replace the main P.C.Board.
Replace F/L Switch.

B.

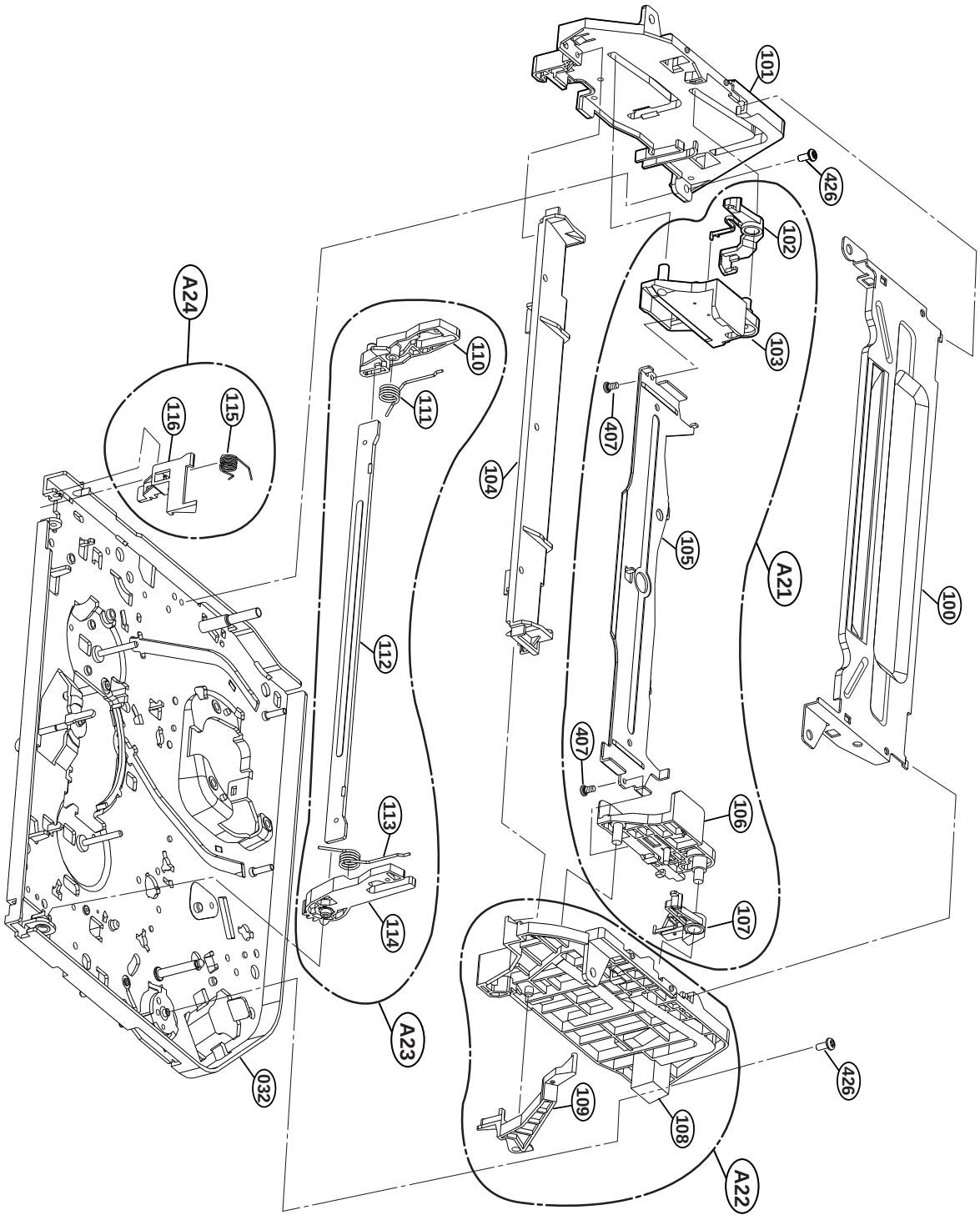


C.


Cassette will not load.
Does the CST insert?
YES
Does the opener Lid work?
YES
NO
Replace the Opener Lid.
Does the Gear Rack F/L work?
YES
NO
Replace the Rear Rack F/L.
Does the Opener Door work?
YES
NO
Is the opener Door assembled correctly?
Does the Arm Assembly F/L work?
YES
NO
Replace the Arm Assembly F/L.
Does the L/D Motor work?
YES
NO
Check the power of L/D Motor.
Does the Holder Assembly Cassette move the Arm Assembly F/L?
YES
NO
Is the Holder Assembly Cassette assembled correctly?
Replace the Front Loading Mechanism Assembly.

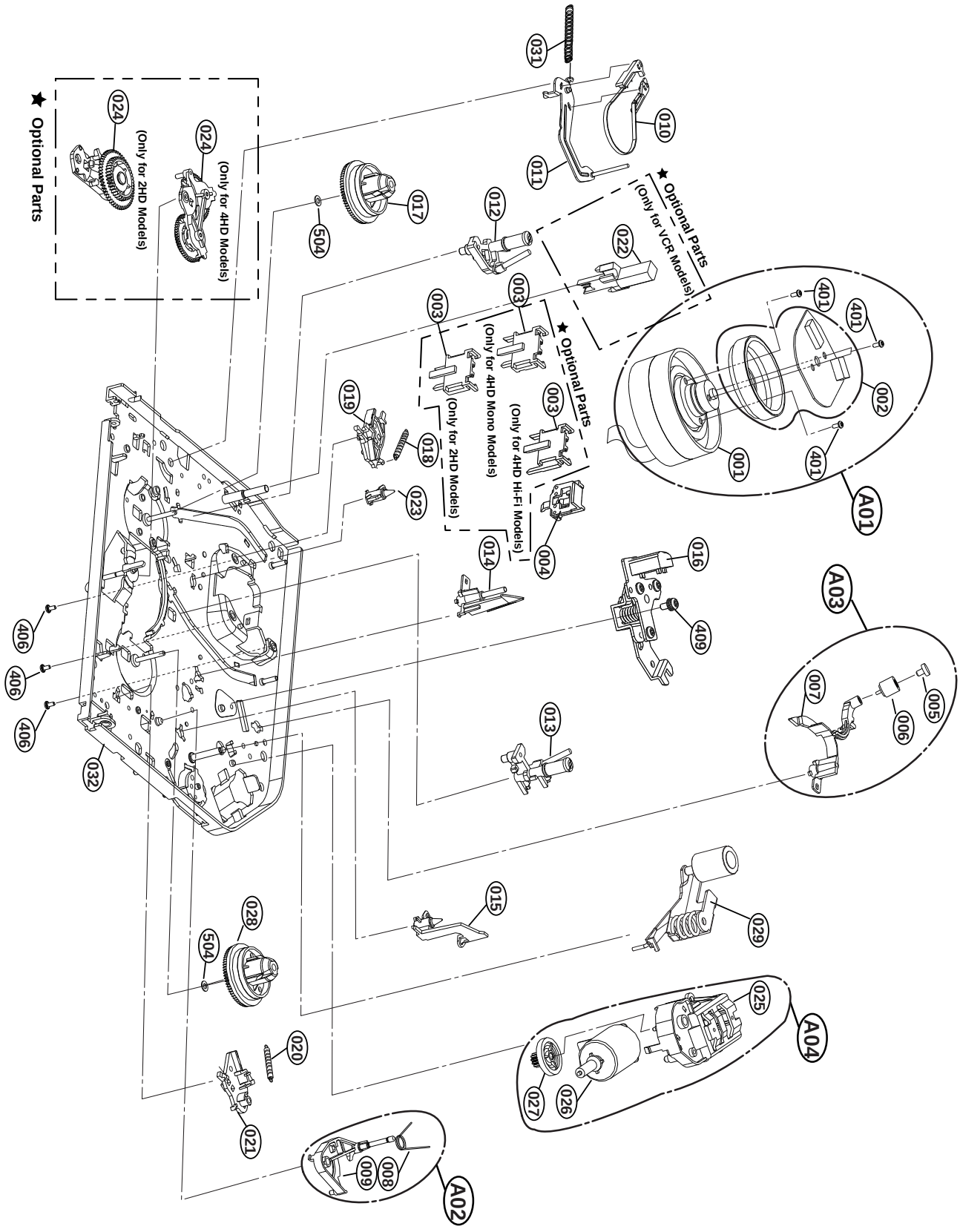
EXPLODED VIEWS

1. Front Loading Mechanism Section



EXPLODED VIEWS

2. Moving Mechanism Section(1)



EXPLODED VIEWS

3. Moving Mechanism Section(2)